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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXX. No. 1. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

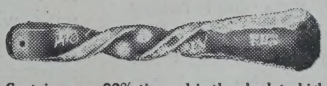
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FIRST OF THE FIRST:—A detached flight of No. 1 (Fighter) Squadron, R.A.F., at Sulaimaniya, in Kurdistan, which co-operated with the Iraq Levies during 1925. No. 1 Squadron is the direct successor of No. 1 Squadron, R.F.C. which was, before the War 1914-18, the "Kite and Balloon" Squadron, and handled the Army's airships. The R.F.C. was formed originally from the Air Battalion, Royal Engineers, which in turn originated from the Balloon Company, R.E. No. 1 Squadron's own motto appears above the picture and indicates the spirit of the personnel.

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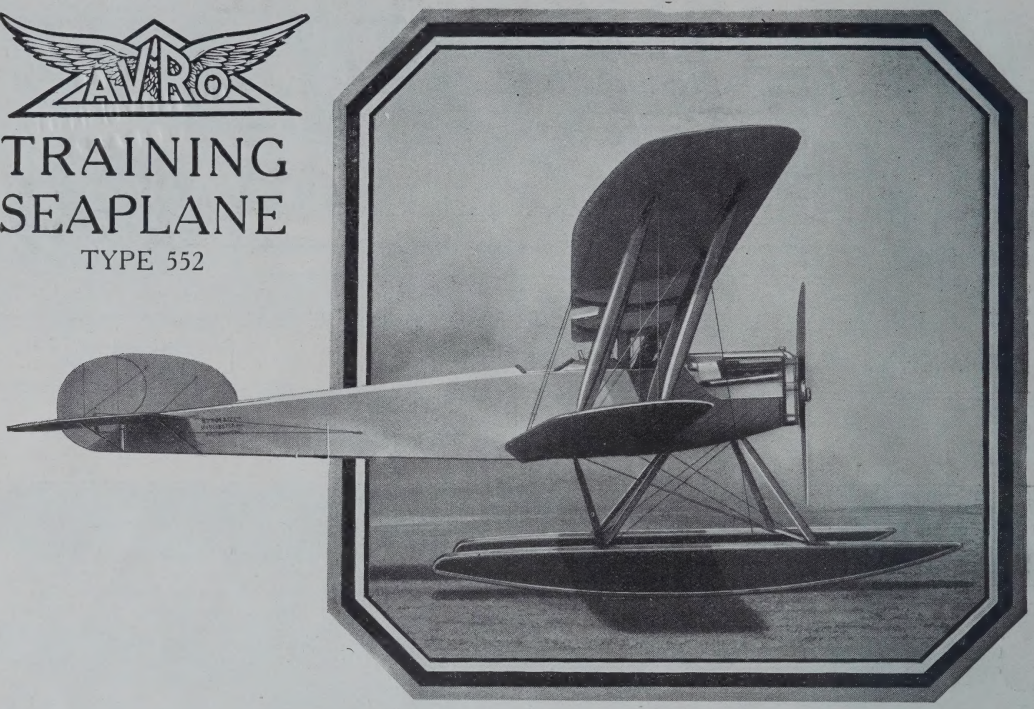
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THE AEROPLANE

Incorporating

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VOL. XXX. No. 1.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months 32s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
U.S.A., 1 Year, $8 50c.

ON AVIATION IN 1925.—I.

Taking it all round 1925 has been a very successful year for British Aviation. On the Service side, on the Technical side, and in Civil Aviation, including its three branches, airline work, commercial flying, and sporting flying, quite satisfactory progress has been made.

It is true that the progress might have been more rapid if various people in all the different divisions of aviation had had more enterprise and more foresight and more common sense. But, human nature being what it is, we cannot expect all those who occupy the high places to be men of first-class calibre in their own particular jobs. And in fact it is just as well that they should not be so. The mere exercise of overcoming obstacles has a strengthening effect on those who overcome them.

Moreover there is a great deal in the old adage "Be not the first by whom the new is tried, nor yet the last to set the old aside." Which corresponds to the Latin tag "*In medias tutissimus ibis.*" In other words a middle course is safest, or, as some philosopher remarked, "Success in life is obtained by a series of compromises." And we can console ourselves with still more proverbs, such as "*Festina lente,*" and "Softly softly catchee monkey." Thus we may justify our own stupidity or stolidity.

The R.A.F. in the Old Year.

So far as the R.A.F. is concerned affairs have gone well. The amount of flying done has increased very considerably during the year. As a natural result the number of accidents, fatal and otherwise, has increased. But the proportion of accidents to miles flown has decreased. Also we must remember that there are more squadrons in being now than there were a year ago and that there are many more new pilots flying than there were in 1924.

Everyone who is intimate with aviation knows that a young and inexperienced pilot is much more likely to crash, whether he kills himself or not, than is a pilot who has flown for a year or so. And if it were possible to analyse the accidents in the R.A.F. it would be found that by far the greater number of fatal accidents have happened to pilots who have been flying for a year or less.

An experienced pilot was killed in a very ordinary accident, but his habitual manner of flying was such that the people who knew were merely mildly surprised that he had not killed himself sooner. Practically all the rest were comparative novices. Which is only what was to be expected, in view of experiences during the War 1914-18.

So far as one can learn, the cause of the majority of accidents was the old familiar stall followed by a nose-dive and/or spin. Sometimes it happened when machines were getting off, sometimes it happened when they were coming in to land, and one believes that in some cases it was caused by Army Co-operation pilots being so keen on watching the



PROGRESS.—The Fairey Fox, a machine with a fine performance, which has done a lot to free Aircraft Constructors from official interference, having been designed and built without the assistance or hindrance of the technical experts of the Air Ministry. It has been put into production for the equipment of the R.A.F. It is a healthy sign of progress to know that the performance of the Fox (which has been flying for more than a year) has already been surpassed on actual test by a still newer British machine.

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ground that they forgot to watch what their machine was doing,—which is a strong argument in favour of the Savage-Bramson anti-stall gear, which gives unmistakable warning by physical contact and not by sight of an approaching stall.

The Air Staff has done everything possible to decrease the number of accidents in the R.A.F. In fact, from what one learns from very unofficial gossip in the R.A.F., the Air Staff, which should properly be concerned solely with Operations, has on various occasions put its collective foot down hard and has insisted on having certain material the supply of which would normally depend on the Technical Departments.

The Air Staff's Efforts.

The Air Staff knows that the pilots and other flying personnel must have the best possible equipment. And so, instead of waiting till the various sub-departments and sub-sections of sub-departments of the Technical Departments have all ground their little axes and finished playing with their own pet fads, the Air Staff has cut right through the usual wrappings of red tape and has insisted that the Supply Department should give it what it wanted.

The outstanding cases in point have been the ordering of American parachutes and of the Fairey Fox two-seater fighter. No doubt there are parachutes of English design, which, if properly developed, are the equal of the Irving parachute. But unfortunately the Technical Department, since the end of the War 1914-18, has omitted to go on developing the various promising types of parachutes which were coming into existence towards the end of the War. And the fact remains that those few people who were making parachutes during the War have, for one reason or another, not produced a parachute which has passed such conclusive tests as has the Irving.

Consequently the Air Staff, being convinced as the result of the many successful descents by parachute in the States as reported continuously by our Air Attaché in Washington, that the Irving parachute has so far proved to be 100% efficient, simply ordered that Irving parachutes should be ordered.

Naturally this order produced a series of attacks on the Air Ministry from its habitual enemies both in the Press and among private individuals. But there were no justifiable grounds for those attacks and they were merely made on the principle that any stick is good enough to beat a dog with.

A Wholesale Experiment.

The instance of the Fairey Fox was very similar. Mr. Fairey, having made handsome profits out of contracts for aeroplanes built strictly according to Air Ministry specifications, very enterprisingly and patriotically proceeded to invest some of those profits in building an aeroplane purely according to his own ideas, assisted by the experience which members of our family on the other side of the Atlantic had bought at vast expense in developing their record-breaking racing aeroplanes and seaplanes. The result was a two-seater fighter which was a great many miles an hour faster than the fastest single-seater fighter built in this country strictly to Air Ministry specifications.

Such a machine could not be ignored. If it had been neglected there would have been just ground for raising a storm in Parliament.

So the Air Staff decided that, purely as an experiment, it would have a squadron of high-speed two-seaters just to see whether it was possible, by manning such a squadron with pilots of proved skill on fast machines, to do things which could not be done with the very much slower standard type two-seaters.

The designers of the machine used the American Curtiss engine because it had certain characteristics, in the matter of small frontal area and consequent decreased head resistance, which were not available anywhere else—at any rate according to their ideas. Naturally the Air Ministry would have preferred to have English engines and the Fairey Company were quite prepared to build Curtiss engines in England. But the Air Staff were faced with the choice of waiting for two years till British-built Curtiss engines were tried out and put through their type tests, which meant waiting three years for their experimental squadron, or ordering Curtiss engines from America and having the complete experimental squadron during 1926.

Again the enemies of the Air Ministry arose and chastised the authorities for spending £60,000 in America on an experiment—regardless of the fact that such an experiment must at any rate advance the development of R.A.F. aeroplanes by at least two years. But one notices that none of these enemies of the Air Ministry has ever raised any question in the Press or in Parliament as to why something like double that sum has been spent without effect on the Brennan helicopter. The only possible explanation seems to be that the helicopter contract was placed in the days of Mr. Lloyd George when those who are now the enemies of the Air Ministry were friendly with those in power.

One mentions these matters merely by way of showing that the Air Staff is very much alive to the interests of those who fly, besides attending adequately to its own job of looking after Operations. One may add that the recent display of interest in the development of all-metal aeroplanes, metal-hulled flying boats, which are a vital necessity to us because of the World's shortage of timber suitable for aircraft, and numerous other developments of a purely practical nature, have been greatly assisted by pressure from the Air Staff, which knows what it wants and means to get it.

Operations in The East.

So far as operations are concerned, the R.A.F. has done everything that could be expected of it during the past year.

In India, under Sir Edward Ellington, the R.A.F., despite continued shortage of material caused by the parsimony of the Government of India, has done excellent work in keeping order among our turbulent relatives along the Afghan Frontier. And the social status of the R.A.F. in India, which round about 1918-19 was at a lamentably low ebb, has been vastly improved.

In Iraq, under Sir John Higgins, the R.A.F. has continued to demonstrate the efficacy of Sir Samuel Hoare's doctrine "Control without Occupation." A strict watch has been kept on the incursions of provocative Turks from the North. The troublesome Kurds, like the Pathans a remnant of the masterful and quarrelsome Nordic peoples, have been kept in check to the North-East side. The desert tribes of Arabs have been made quite amenable to reason.

Perhaps one must except our former friend and more recent enemy, Ibn Saud, the Sultan of Nejd. He has been a very difficult problem to tackle owing to the facility with which he launches some tens of thousands of men on camels in a raid on the weak-kneed Iraquis to the North-East of his area, disperses his camelry over thousands of square miles of desert before the Air Force can get to the scene of operations, and then collects them again for a fresh raid on the Trans-Jordanian subjects of the Emir Abdullah away to his North-West.

One confesses to a certain sympathy for Ibn Saud in that he is a man who is in deadly earnest and is working for what he considers to be the good of the Arab peoples. His feud against Hussein, late King of the Hedjaz, and Hussein's sons, Feisal King of Iraq, Abdullah King of Trans-Jordania, and Ali the present titular King of Mecca, who has now been driven onto the beach of the Red Sea at Jeddah, is much more a matter of conscience than of personal dislike. And the Hashimite family do seem to be a fairly futile lot anyhow.



ON THE WAY.—A photograph taken by Mr. A. B. Elliott, of the De Havilland 50J, on which he and Mr. Cobham are making their journey to the Cape. This shows the machine on its arrival at Sollum.

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According to the latest rumours we are not likely to have much more trouble with Ibn Saud because, apparently, we are now paying him a reasonable subsidy to keep order in Southern Arabia. It was the influence of the subsidy which we paid him during the War 1914-18, to finance his operations against the Turks, which made him as powerful as he is and naturally we became unpopular when we withdrew that subsidy after the War.

Apart from that, the R.A.F. in Iraq is doing excellent work and those in high places in this country have evidently made up their minds that we are going to stop there, in spite of the agitations of My Lords Rothermere and Beaverbrook in their respective newspapers. The permanent buildings of the R.A.F. at Hinaidi and at Basra indicate that we intend to stay in Iraq and protect not only the existing wells of the Anglo-Persion oil-fields in Persia but to develop the oil which is known to exist in vast quantities in Iraq.

It is interesting to note that both officers and men who have served in Iraq, although they grumble about the intense heat during their first hot season in the country, almost invariably long to get back there after they have been at home for a while. It is curious that despite the lack of social life, as compared with India, Iraq seems much more popular among the personnel of the R.A.F.

In Egypt, which includes Palestine and Trans-Jordania, under Sir Oliver Swann, the R.A.F. has thoroughly maintained its reputation. The big training station, No. 4 F.T.S., at Abu Sueir, is an excellent training ground for pilots owing to the reliability of the climate. But why is our great Egyptian aircraft depot kept at Abukir, where all our Middle East supplies are open on three sides to bombardment from the sea? We ought to know enough by now not to commit our safety to Naval defence.

The squadrons in Palestine and Trans-Jordania and the detached flights at Aden and in Somaliland all uphold the prestige of Great Britain. And the influence of England in the Northern part of Central Africa has been materially increased by the excellent flight of three D.H.9a machines of No. 47 Squadron from Egypt to Khartoum and thence across to Kano and back.

The Mediterranean.

In the Mediterranean the sea-going section of the R.A.F. has made a number of fine flights both in co-operation with the British Navy and as independent units. Numerous changes have taken place in the command at Malta, but one may fairly ascribe the excellent organisation and the general spirit of the Air Force in that area to the efforts of Air Commodore Samson. His long flights to Gibraltar and back, and to Constantinople and back, not only set a good example to the personnel but definitely discovered many points in design and construction of our seaplanes and flying boats which have proved to be of high value both to the Service and to the Aircraft Industry.

This command is now under Air Commodore Clark-Hall, one of the earliest of naval aviators and an officer whose war record is not only distinguished but free from untoward incident. So one may be sure that the R.A.F. in the Mediterranean will maintain and increase its already high reputation.

Home Work.

At home the Air Council has continued the general policy of expansion which was laid down by Sir Samuel Hoare when he was first in office and continued by his successors in the Labour Government. The expansion has not been so rapid as we could all have wished, but Sir Samuel and his permanent officials both Service and civilian have accomplished a great deal with the means at their disposal.

A number of new squadrons have been raised. Some of them have been equipped with aeroplanes of designs which are not more than three years old or so. The schemes for the R.A.F. Reserve, and the Special Reserve Squadrons, and the Auxiliary Force Squadrons, are all gradually coming into operation.

Air Marshal Sir John Salmond, who on his return from his successful command in Iraq, was appointed to organise and command the Home Defence Area, is putting his command into working order in that quietly effective way which is characteristic of everything that he does. Abandoned aerodromes are being re-opened for the accommodation of Home Defence Squadrons and everything appears to be all that could be wished of it.

The Inland Area under Air Vice-Marshal Webb-Bowen is working remarkably smoothly. One hears practically no complaints either from officers or men. The wonderful display made last Summer at Wembley by recruits from the R.A.F. Depot at Uxbridge, for which the credit belongs jointly to Air Commodore Bonham-Carter and Flt. Lt. Wombwell, indicates the happy combination of discipline and good feeling which pervades the Inland Area.

The Coastal Area, under Air Vice-Marshal Scarlett, is doing quite good work in spite of the natural difficulties experienced in working with the Navy, and consequent on the personnel being in the Navy without being of the Navy. The Coastal Area owes a great deal to the fact that it was commanded for so long by Sir Vyell Vyvyan, who is about the one naval officer of his seniority who has ever really understood the proper uses of aircraft and the proper method of handling the personnel of the R.A.F.

Training Establishments.

The supply of airmen for the R.A.F. now depends chiefly on the School of Technical Training for Boys at Halton and No. 4 Apprentice's Wing at Cranwell.

Hitherto young men have been enlisted from civilian life, some of them partly trained as garage mechanics, tinsmiths, carpenters and so forth, and some of them utterly untrained. After being knocked into some sort of shape at the Depot at Uxbridge, they have been sent to the School of Technical Training for Men at Manston where they have been taught first of all to unlearn what they thought they knew, and then to learn to do things Air Force fashion.

In these days, the airman is caught young and goes to school at Halton or Cranwell. The boys who come into these establishments are most carefully selected and have to pass quite a reasonably stiff examination before they are admitted, as well as having to produce certificates of moral character. Without wishing to be in any way snobbish, one must say that the social quality of the boys in these two establishments is very much higher than that in either of the Senior Services or in the old R.A.F.

During the past year or so the first batches of these boys who have passed through their full course of training have been sent out to squadrons as trained mechanics. One hears from various of one's friends to whose squadrons these boys have been appointed that they are on the average very keen, very intelligent and very well trained. Being caught young they are brought up to regard the R.A.F. as their father and mother and complete family and so they are full of an esprit de corps which looks well for the future of the R.A.F.

For its officers the R.A.F. looks primarily to the Cadet College at Cranwell. Here also the general level of the R.A.F. is rising. A year or two ago there was considerable difficulty in getting enough candidates to apply for Cranwell and even those were not of the highest intellectual or social quality. Of late the quality in both directions has been improving and some of the best of our public schools are now sending people to the R.A.F.

As an encouragement to the Other Ranks a limited number of cadetships at Cranwell are being given to the people at Halton and the Apprentice's Wing at Cranwell. So far as one can gather these cadets attain a high level of intelligence and industry, but of course it still remains to be seen whether they are also keen on flying and whether they will ever make good officers.

Those who knew the old Army before the War and the best of the R.F.C. and R.N.A.S. and R.A.F. during the War know that the very best officers and the finest leaders of men and the most intelligent makers of war are quite often men of very limited education, so far as mere book-learning is concerned, but do belong quite distinctly to the governing class. And it is unfortunately a fact that those who display the most brilliant mental ability in their youth are generally passed in the race of life before they attain the age of thirty by men who in their earlier days have appeared to be of only mediocre ability.

One of the most successful institutions in the Air Force is undoubtedly the Staff College at Andover. It was founded by Air Commodore Brooke-Popham, now Air Vice-Marshal, himself a distinguished graduate of the Army Staff College at Camberley. The system which he then laid down has proved most successful and the officers of the R.A.F. after whose names in the R.A.F. List appear the mystic letters *p.s.a.*, indicating that they have passed for the Staff at Andover, are a remarkably good lot.

The Chief.

Over all the R.A.F.'s activities Air Chief Marshal Sir Hugh Trenchard has kept an eye which is apparently all-seeing. Sir Hugh has many enemies, as all strong men must have, but those who are loyal to him outnumber those who are disloyal in such proportion that his enemies would count for little but for the fact that a few of them happen to have a good deal of influence in the Public Press.

Every year there is a fresh rumour that the particular year in question is to be the last of Sir Hugh's tenure of office as Chief of the Air Staff. But the end of each year sees him still in office. And the great majority of people concerned with aviation in this country, not only in the R.A.F. but in the Aircraft Industry, would like to see Sir Hugh Trenchard a permanent institution in the R.A.F.

That unfortunately cannot be so, owing to the constitution of the King's Fighting Services. But it is to be hoped that the present Chief of the Air Staff will retain his appointment until the various schemes which have been drawn up under his direction are in full working order. When they


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are so he will probably be able safely to hand over the control of the Air Force to a kind of syndicate, analogous to the Imperial General Staff at the War Office.

In the meantime it is well to remember that the R.A.F. owes its existence as an independent Service almost entirely to Sir Hugh Trenchard. If it were not for his curious ability to be a fighting man in time of peace there is no doubt that two years or more ago the R.A.F. would have been split up and divided between the Navy and the Army. If that had happened the future of our aerial fighting forces would have been committed to the Admiralty and the War Office. And so the development of air tactics and of aircraft design would have been subordinated entirely to the requirements of the Navy and Army on sea and land.

That would almost certainly have meant the expenditure of very much less money, in that the squadrons would only have been intended for co-operation with the Fleet or with the Army and none would have been demanded for independent action. The result would have been a dangerous decrease in the number of machines and men available in case of war and a dangerous absence of knowledge as to how to handle modern aircraft of war.

The statement that nothing alters the principles of war is as true now as ever it was. But in applying those principles there is a vast difference between treating any given arm as a primary arm or treating it merely as an accessory to other arms. And the justification of the existence of the Royal Air Force is the fact that only under an Air Staff with its full complement of technical services can aircraft ever be used to the fullest extent as a primary arm.

The most innocent novice as a student of war will readily recognise the fact that there is all the difference in the World between fighting a war with troops on the ground assisted by aircraft and fighting a war in the air in which the troops on the ground are chiefly employed to hold an area the occupation of which has been made possible by battles in the air. And similarly there is an equal difference between a war at sea between big-gun ships, in which aircraft only act as gun-spotters or torpedo-droppers, and fighting a war in the air over the sea in which surface ships are only used as aircraft carriers and escorts.

In due course, no doubt, as Sir Hugh Trenchard suggested in a speech at the Independent Force Dinner about four years ago, the Navy will have its own little air service and the Army will probably have its own flying corps consisting of infantry co-operation and artillery observation squadrons. But there will remain the great solid mass of the Royal Air Force as the First Line of Offence and Defence of the British Empire. And for that fact we shall bless the name of Sir Hugh Trenchard.—C. G. G.

(To be continued.)

THE ROYAL AERONAUTICAL SOCIETY'S DIAMOND JUBILEE.

A conversazione will be held by the Royal Aeronautical Society in the Aeronautical Section of the Science Museum, at 8.30 p.m. on Tuesday, Jan. 12, the Society's sixtieth birthday.

In addition to the wonderful collection of exhibits in the Aeronautical Section, which are the most numerous and representative of any collection in the world, a special exhibit of early aeronautical books, prints and curiosities has been arranged. A section of this exhibit will be devoted to illustrating the development of the Society and the work of some of its more distinguished Members.

An opportunity will also be offered of inspecting the Reid Indicator, that remarkable machine for testing a person's capabilities for piloting. The R.A.F. String Band will play during the evening.

Sir Samuel Hoare, Secretary of State for Air, has kindly consented to say a few words.

Among the distinguished people who have signified their intention of attending are Sir Vyell Vyvian, Sir Sefton Brancker, Sir Joseph Cooke (High Commissioner for Australia), Sir Edward Stephenson (of the Colonial Office), Sir Geoffrey Butler (M.P. for Cambridge University), Sir Robert Carlyle, the Military and Naval Air Attachés of the various embassies and legations, and almost all the pioneers of aviation, such as Messrs. Patrick Alexander, A. V. Roe, Handley Page, and many others.

The occasion being the Diamond Jubilee of the oldest aeronautical organisation in the World, is naturally of considerable importance.

Royal Aeronautical Society's Lectures.

Particular attention is drawn to the change of time of the Society's lectures, from 5.30 p.m. to 6.30 p.m.

The following programme has been arranged for the 1926 season:—

Jan. 7, Professor A. J. Sutton Pippard, D.Sc., F.R.Ae.S.: "The Experimental Stress Analysis of Frameworks with Special Reference to the Problems of Airship design."

Jan. 21, Major J. S. Buchanan, A.F.R.Ae.S.: "The Schneider Cup Race, 1925."

* Feb. 4, at 7 p.m. (Joint Meeting with the Institution of Automobile Engineers, at the Royal Society of Arts), Mr. C. L. Lawrance: "American Aircraft Engine Development."

Feb. 25, at 6.30 p.m., Mr. A. J. Cobham: "Long Distance Aeroplane Flights."

Mar. 4, at 6.30 p.m., Major G. H. Scott, C.B.E., A.F.C., A.F.R.Ae.S.: "The Development of Airship Mooring and Handling."

Mar. 18, at 6.30 p.m., Flt. Lt. H. Cooch: "Landing Aeroplanes in Fog."

Apr. 15, at 6.30 p.m., Capt. G. T. R. Hill, A.F.R.Ae.S.: "The Tailless Aeroplane."

Apr. 29, at 6.30 p.m., Lieut.-Col. V. C. Richmond, O.B.E., A.F.R.Ae.S.: "The Results of Recent Airship Flight Tests."

Advance proofs of the above Lectures (price 6d. each or 3s. 6d. for the series) will be sent on request to those wishing to read the Papers beforehand, as soon as they are available from the printers.

The Lectures will take place at 6.30 p.m. at 7, Albemarle Street, except in the case of the one marked *, which will be held at 7 p.m., at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

THE AIRSHIP PROGRAMME.

The Aviation Correspondent of *The Daily Telegraph* on Jan. 2 says:—

The big rigid airship R.36, with which it was intended to make a voyage to Egypt early this year, will not after all be recommissioned. It is understood that the cost of preparing her for a voyage will be out of proportion to the service she would perform. It was intended that she should make meteorological research trips between Egypt and Karachi in preparation for the opening up of the British-India airship route with the two bigger airships now being built. The airship meteorological section at the Air Ministry are, however, confident that the data they have for long been collecting will suffice. The R.33 will probably make a few more voyages, but she has now completed much of the research work for which she was recommissioned.

These plans leave an unfortunate gap as regards experience-gaining flights for the personnel, for it is unlikely that either of the two new airships will be ready before the autumn of 1928. This is a circumstance which strengthened the case for the proposed small airship club, which the Air Ministry is being asked to assist in the same manner as it is assisting local light aeroplane clubs. A scheme drawn up by Commander F. M. Boothby promises a much better financial foundation than has proved, on hard experience, possible with the light aeroplane clubs in present circumstances. The small non-rigid airship built for the Algarsson polar expedition is available, and an effort would be made to build another ship. It is now suggested that possibly the R.36 might also be used, and that the Air Ministry should welcome a scheme which, whilst saving public expenditure, would ensure a reasonable continuity in airship training.

THE BRITANNIA TROPHY.

The Royal Aero Club will have to consider shortly to whom they will award the Britannia Trophy. The Trophy is given for what is considered "the best individual performance in the air" during the past year. An individual performance has been construed to mean just a performance. For instance last year it was construed to mean a series of flights performed by two people lasting several weeks during which they flew round the Continent of Australia.

There have been several good performances of 1925 which the Club will have to consider. For instance, the performance of Flt. Lt. (now Sq. Ldr.) Booth and the crew of the R.33 when that ship with a damaged nose was swept away to Holland in a gale and was brought back safely.

Then there was Mr. F. L. Barnard's wonderful high-speed flight round Britain in fog on the first day of the King's Cup race.

There was Mr. Rogers' flight to Zurich and back in the day on a heavily-loaded W.8b. And there have been several other noteworthy flights by pilots of Imperial Airways Ltd. that have passed unnoticed.

Then there was the production and fine flying of the Cranwell Club's monoplane.

Mr. Courtney's fine test work for the past year must also be considered.

The Brancker-Cobham-Elliott flight to Burma and back is hardly eligible as much of that flight took place in 1924.

Altogether there have been many fine performances of 1925 from which to choose but one is inclined to think that the award should go to the crew of the R.33.—G. D.

THE NEXT SCHNEIDER TROPHY CONTEST.

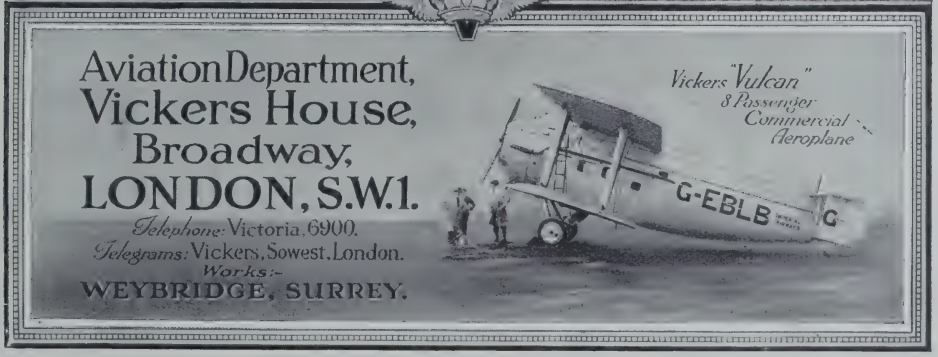
A meeting of the F.A.I. will be held in Paris to discuss the next Schneider Trophy Contest. The proposed date of Oct. 24 will be confirmed or the reverse.

The F.A.I. is really quite as bad as our own Air Ministry. Surely a meeting could have been called some time in November or early in December so that constructors could construct, knowing what and for what and for when they were constructing.

If any changes in the general arrangement of the contest are contemplated it is hoped that they will not amount to more than limiting landing speed. It is the only surviving speed competition pure and simple of any standing left and any suggestions to knock off top speed by limiting power or adding weight should be opposed with vigour.


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THE ROYAL AIR FORCE.

The London Gazette

Dec. 29.

Group Capt. P. F. M. Fellowes, D.S.O., is appointed Air Aide-de-Camp to his Majesty the King (Dec. 17) (vice the late Group Capt. C. F. Kilner, D.S.O.).

General Duties Branch.—The following are granted perm. comns. in the ranks stated (Jan. 1) :—

Flt. Lts.—G. C. Bladon, D. H. Carey, F. Carpenter, C. Hallawell, C. G. Halliday, F. H. D. Henwood, D.F.C., E. J. Kingston-McCloughry, D.S.O., D.F.C., V. S. Parker, N. M. S. Russell, S. P. Simpson.

Flg. Offs.—J. N. Boothman, B. E. Embry, A.F.C., C. H. Flinn, A. D. H. Foster, C. B. Greet, P. J. R. King, A. H. Love, J. S. Phillips, A. E. Rogenhagen, H. S. Sandiford, A. T. K. Shipwright, D.F.C., G. H. Smith, E. S. C. Vaughan, M.C., R. C. Wansbrough, M. V. Ward.

Flg. Off. R. A. P. Roberts is placed on half-pay, Scale B (Dec. 23, 1925).

The following Flg. Offs. are transferred to the Reserve, Class A (Dec. 29, 1925) :—E. Marler, H. J. Wykes.

Stores Branch.—Flg. Off. C. W. H. Moller is confirmed in his appointment in the Stores Branch (Nov. 25, 1925).

Accountant Branch.—Plt. Off. on probation J. R. Thomas is confirmed in rank and is promoted to the rank of Flg Off. with effect from Dec. 3, 1925, and with seniority Nov. 10, 1925.

Reserve of Air Force Officers.—H. Wyllie, O.B.E., is granted a comn. in Class C, General Duties Branch, as a Flg. Off. (Dec. 29, 1925); Plt. Off. L. F. Cubitt is confirmed in rank (Dec. 23, 1925). Flt. Lt. S. H. Gaskell is transferred from Class A to Class C (May 30, 1925).

The comn. of Plt. Off. on probation W. B. O'R. Coleman is terminated on cessation of duty (Dec. 8, 1925).

Memorandum.—G. S. Marshall, O.B.E., is granted a temp. comn. as a Flt. Lt. (Legal Off.) (Dec. 14, 1925).

Appointments.

Week ending Jan. 5, 1926.

General Duties Branch.—Wing Commanders J. C. Halahan, C.B.E., A.F.C., to R.A.F. Depot pending disposal on transfer to Home Estab., 30/10. I. G. V. Fowler, A.F.C., to R.A.F. Depot pending disposal on transfer to Home Estab., 4/11. W. C. Hicks, A.F.C., to No. 2 Wing H.Q., India, to command, 3/11.

Squadron Leader R. H. M. S. Saundby, M.C., A.F.C., to No. 4 F.T.S., Egypt, 9/12.

Flight Lieutenants R. Whitaker, M.B.E., to H.Q., Inland Area, 10/1. L. H. Browning, M.C., D.F.C., to No. 3 Sqdn., Upavon, 4/1. E. L. Ardley, to R.A.F. Depot on transfer to Home Estab., 30/10. W. Catchpole, A.F.C., to R.A.F. Depot on transfer to Home Estab., 4/11. J. R. Cassidy, to H.Q., Palestine, 11/12.

Flying Officers T. H. Moon, to Engine Repair Depot, Egypt, 28/11. E. B. Addison, to R.A.F. Depot, 1/1. B. E. Embry, to No. 30 Sqdn., Iraq, 1/12. F. W. Long, to Experimental Section, R.A.E., S. Farnborough, 16/1. (Hon. Flt. Lt.) E. V. Major and F. E. Watts, to R.A.F. Base, Calshot, 19/1. T. B. Fenwick, to Central Flying School, Upavon, 4/1. (Hon. Flt. Lt.) I. E. Brodie, to R.A.F. Training Base, Leuchars, 4/1. J. R. Brown, D.F.C., to No. 70 Sqdn., Iraq, instead of to H.Q., Iraq, 18/11. F. W. L. C. Beaumont, to No. 45 Sqdn., Iraq, 12/12. F. L. Kingham, to No. 1 Stores Depot, Kidbrooke, 3/1. G. V. Wheatley and C. Gardner, to R.A.F. Depot on transfer to Home Estab., 30/10. J. T. Hall, to No. 24 Sqdn., Kenley, 8/1. C. C. Musselwhite, to R.A.F. Depot on transfer to Home Estab., 4/11. K. R. Thomas, to R.A.F. Depot on transfer to Home Estab., 30/10. F. G. S. Mitchell, (Hon. Flt. Lt.) G. N. Carroll and J. B. Townend, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 30/10.

Pilot Officers J. F. Young, to R.A.F. Base, Calshot, 19/1. B. B. Dowling, to No. 2 F.T.S., Digby, 16/1. C. W. Martin, to No. 23 Sqdn., Henlow, 1/1. D. C. Shaw, to No. 43 Sqdn., Henlow, instead of to R.A.F. Base, Calshot, 15/12. B. E. Moody, to No. 2 F.T.S., Digby, 16/1. J. G. Chamberlain, to No. 23 Sqdn., Henlow, instead of R.A.F. Base, Calshot, 15/12.

Medical Branch.—Wing Commanders A. W. Iredell, to H.Q., Halton, for duty as Principal Medical Officer, 7/1. B. A. Playne, D.S.O., M.B., B.A., to Air Ministry for Medical Staff duties, 7/1.

Squadron Leader H. A. Hewat, M.B., D.T.M. and H., to H.Q., Egypt, 7/12.

Flight Lieutenant (Dental) H. J. Higgins, to H.Q., Palestine, 17/12.

Flying Officers W. A. Beck, M.B., D.P.H., to Palestine General Hospital, 30/11. H. M. Levy, to No. 5 F.T.S., Sealand, 29/12.

Stores Branch.—Flying Officers F. A. Ormerod, to No. 1 Stores Depot, Kidbrooke, 22/12. S. D. Dennis, to H.M.S. *Furious*, 1/1. W. Bourne, to Air Ministry, 11/1.

Accountant Branch.—Flight Lieutenant C. H. Moore to Aircraft Depot, Egypt, 5/11.

An Appointment.

The Air Ministry announces the appointment of Group Captain Peregrine Forbes Morant Fellowes, D.S.O., as Air Aide-de-Camp to the King (vice the late Group Captain Cecil Francis Kilner, D.S.O.).

The New Year's Honours.

K.C.B. (Military Division).

Salmond, Air Vice-Marshal Sir William Geoffrey Hanson, K.C.M.G., C.B., D.S.O., p.s.c., Royal Air Force.

[Air Vice-Marshal Sir Geoffrey Salmond is Air Member for Supply and Research in the Air Council.]

Promotions and Awards.

The Air Ministry announces :—The King has been graciously pleased to approve the promotion of Wing Cdr. Richard Charles Montagu Pink, C.B.E., to the rank of Group Captain in the Royal Air Force in recognition of his distinguished services in the Field in Waziristan. To date Jan. 1, 1926.

The King has been graciously pleased to approve of the following awards to the undermentioned officers and airmen of the Royal Air Force :—

Awarded the Air Force Cross.—Sq. Ldr. Arthur Coningham, D.S.O., M.C., D.F.C., Flt. Lt. Leonard Graeme Maxton, Flg. Off. Basil Edward Embry.

Awarded the Air Force Medal.—327067 L-AC. (Acting Cpl.) Frank Stone, 11838 Cpl. (Acting Sjt.) Henry Grant, 87366 Sjt. (Pilot) Thomas William James Nash.

The Half-Yearly Promotion List.

Air Ministry, Dec. 31, 1925.

The undermentioned are promoted with effect from Jan. 1, 1926 :—

General Duties Branch.

Wing Commander to be Group Captain.—Edmund Digby Maxwell Robertson, D.F.C.

Squadron Leaders to be Wing Commanders.—Frederick Henry Unwin, O.B.E., Vivian Gaskell-Blackburn, D.S.C., A.F.C., Henry John Francis Hunter, M.C., Arthur Clinton Maund, C.B.E., D.S.O., Douglas Harries, A.F.C., Arthur Claud Wright, A.F.C., John Oliver Archer, C.B.E., Charles William Nutting, O.B.E., D.S.C., Robert Leckie, D.S.O., D.S.C., D.F.C., Walter Gerald Paul Young, O.B.E.

Flight Lieutenants to be Squadron Leaders.—Henry Cockerell, O.B.E., Francis William Trott, O.B.E., M.C., Alan Fitzroy Somerset-Leeke, Frederick George Sherriff, M.C., John Farquhar Gordon, D.F.C., Charles Beauvoir Dalison, A.F.C., Richard Spencer Lucy, A.F.C., William Samuel Caster, M.C., Wilfred Henry Dunn, D.S.C., Charles Langston Scott, D.S.C., Hugh Henry MacLeod Fraser, Dirk Cloete, M.C., A.F.C., Albert Durston, A.F.C., Meredith Thomas, D.F.C., A.F.C., Trevor Edward Salt, A.F.C.

Flying Officers to be Flight Lieutenants.—John Christian Barraclough, George Henry Russell, D.F.C., Horace Gramshaw Payne Ovenden, Thomas Humble, Hilton Oscar Brown, M.M., George Robert Oliver, Gilbert Latham Ormerod, Richard Vaughan Bramwell-Davis (Lieut., R.F.A.), Denis Holcombe Carey, John Duncan, Christopher Neil Hope Bilney, William Whitefield McConnachie, Charles Dudley Palmer, Alfred Edwin Lindon, M.B.E., Albert James Ernest Broomfield, D.F.C., Thomas Rose, D.F.C., Charles Leslie Cox, Pat Murgatroyd, Ernest Caizley Usher, Vincent Percy Feather, Eyare King Blenkinsop, Charlton Hallawell, Robert John Hayne Holland, Robert Lyle McKindrick Barbour, D.F.C., Lawrence Fleming Pendred, D.F.C., Charles John Sims, D.F.C., John Lawrence Kirby, Frederick Frank Garraway, Owen Wilson Clapp, Campbell Alexander Hoy, M.C., Sidney Herbert Ware, Frank George Gibbons, D.F.C., Cecil Arthur Bouchier, D.F.C., Harold John Saker, Reginald Morville Davy, Frank George Brockman, Ernest Henry Attwood, William James Millen, Edmund Henry Searle, Eric Brewerton, D.F.C.

Stores Branch.

Flight Lieutenants to be Squadron Leaders.—Nevill Ross Fuller, Walter Langston Shaw, M.B.E.

Flying Officers to be Flight Lieutenants.—George Thomas Stroud, M.B.E., Ernest William Lawrence, John Clifford Shakeshaft, Frank Edwin Shersby, Robert Craig, Reginald Vivian Robinson, O.B.E. (Supplementary List).

Accountant Branch.

Squadron Leader to be Wing Commander.—Herbert George Jones.

Flying Officers to be Flight Lieutenants.—James Frederick Robert Eales-White, Herbert Charles Frederick Ellis.

Medical Branch.

Squadron Leader to be Wing Commander.—Frank Cuninghame Cowtan.

Flight Lieutenants to be honorary Squadron Leaders.—George Stephen Ware, M.B., Edmond Francis Neville Currey, Charles Anderson Meaden, Frederick Ernest Wilson.

Princess Mary's R.A.F. Nursing Service.

Sister to be Acting Senior Sister.—Miss Janet MacLeod, A.R.R.C.

Acting Sister to be Sisters.—Mrs. Louisa Learmouth Mackenzie, Miss Mary Anne MacVicar, Miss Elizabeth Spensley, A.R.R.C., Miss Ellen Kate Griffin.

Staff Nurses to be Sisters.—Miss Elizabeth Ann Risdon, Miss Gertrude Swanston, Miss Jessie Warnock Walker.

Staff Nurses to be Acting Sisters.—Miss Alice Mary Hardwicke, Miss Pauline Kipping Pearce, Miss Ellen Jane Stuart, Miss Mary McCallum.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of the flying accident which occurred near Nefisha, Egypt, on Dec. 23, No. 328867 AC.1. Arthur Thomas Groom, the passenger of the aircraft, died of injuries on Dec. 24.

The R.A.F. Memorial Fund.

The last meeting of the Executive Committee was held on Dec. 16. Lord Hugh Cecil was in the Chair.

The Hon. Treasurer announced that he had just received, through the kindness and generosity of the Air Council, a splendid donation, being the result of the R.A.F. Display last June.

The Hon. Treasurer also announced that during his absence in India from January to March next, his duties would be performed by Lt.-Cdr. H. E. Perrin.

It was reported that from Oct. 21 to Dec. 16, the Grants Sub-Committee had dealt with 40 cases and the Secretary with 68 cases.

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The R.A.F. Boxing Association.

A Special General Meeting of the R.A.F. Boxing Association was held at Henlow on Dec. 3. The Rev. H. D. L. Viener, C.B.E., M.A., K.H.C., was in the Chair, and representatives from the following R.A.F. stations were present: Halton, Inland Area, Shrewsbury, Manston (2), Uxbridge (2), Lee-on-Solent, Cranwell, Ruislip, Calshot, Digby (2), Old Sarum, Sealand.

The Meeting then proceeded to revise the Judges' and Referees' List, and ordered the new list to be printed in the current issue of the handbook.

The Chairman opened the question of Amateurism *v.* Professionalism, which had been deferred from the Annual General Meeting. Reports from the Stations showed that Uxbridge, Cranwell, Sealand and Shrewsbury were in favour of amateurism, while at Manston and No. 10 Group, opinion was divided.

At the conclusion of the subsequent debate, the following resolutions were put to the meeting and carried unanimously:—

(1) Proposed by Flt. Lt. Sherriff and seconded by Sq. Ldr. McCrae:—That the Royal Air Force Boxing Association becomes an amateur body.

(2) Proposed by Flt. Lt. Gregson and seconded by Sq. Ldr. McCrae:—That no professional shall be allowed to take part in Royal Air Force boxing.

(3) Proposed by Flt. Lt. Sherriff and seconded by Sq. Ldr. Darley:—Airmen wishing to turn professional must submit their names to the Royal Air Force Boxing Association and should have reached the standard of Inter-Services champion or A.B.A. semi-finalist. All professionals must be registered with the Association.

(4) Proposed by Sq. Ldr. Darley and seconded by Flt. Lt. Sherriff:—All serving airmen boxers who are at present professionals are now given the option of becoming Service amateurs, by signing a declaration that they will become amateur and remain so. All such declarations must be made through Commanding Officers to the Hon. Sec., R.A.F. Boxing Association, not later than June 1, 1926.

Service amateurs will be allowed to take part in Service boxing.

Newly enlisted airmen who are professionals may become Service amateurs on joining by signing a similar declaration.

The list of names of those present shows that there was no representative of the "Other Ranks" at the Meeting. And "Other Ranks" appear to be the people chiefly concerned in the decisions of the Association.

The Constitution of the Association lays down that the Council shall consist of one representative from each group (including independent Units like Henlow, Halton, etc.), and in accordance with A.M.W.O. 177/21, each member of the Council is allowed free travelling to the Meeting.

There does not therefore seem any good reason why the Council should not be representative of the Service as a whole.

R.A.F. Boxing.

The results in the first series of Divisions "A" and "B" of the Team Championships were as follows:—

Division "A": Henlow beat Halton.

Division "B": C.F.S. beat Old Sarum by 11 points to 8; Duxford beat Bircham Newton by 11 points to 8.

The draw in the semi-final is as follows:—Division "A": Flowerdown *v.* Henlow; Manston *v.* Uxbridge.

Division "B": Upavon *v.* Calshot; Sealand *v.* Shrewsbury; Duxford *v.* Digby; Martlesham Heath *v.* Eastchurch.

These matches are to be decided between Jan. 1 and Jan. 23.

The Cranwell Apprentices' Magazine

The twelfth number of the *Boys' Wing Magazine* appears with a new title and will in future be known as the *No. 4 Apprentices' Wing Magazine*.

The current issue is very well produced and excellently illustrated. There are articles on the Lympne Light Aeroplane Meeting, 1925, Airships, and all Sports and Games. Flg. Off. W. E. V. Richards has contributed a very interesting description of the Overland Route from Baghdad to Haifa.

An amusing story, called "Rats," must have been inspired by an A.M.W.O.

The value of the magazine is shown by the fact that former apprentices now stationed in various parts of the world contribute to the magazine and correspond with it. In this way the news of the successes of former apprentices may be a source of inspiration to the teams undergoing training.

Amateur Boxing in the R.A.F.

The following letter has been received:—

Sir,—

The proceedings have now been published of an Extraordinary General Meeting of the R.A.F. Boxing Association held on December 3rd, 1925, to determine the policy of the Association towards professionalism.

At the meeting in question it was unanimously decided that the Association is to turn amateur and all professionals will be definitely excluded from taking part in Service boxing. It is the wish of the Association that its boxers should begin as amateurs and fight their way up to the top as such and thus develop a good style, free from the practices which are unfortunately common among the lower standard of professionals.

Amateurism is by no means a step to professionalism and it is thought probable that the best R.A.F. amateurs will always remain amateurs. As a concession, however, to airmen, who attain such a degree of proficiency that it is clear that boxing as a profession would be of value to them in civilian life, application may be made by such individuals for permission to turn professional. Should such permission be accorded the Air Force would assist with matches, etc., whenever possible; but the Association would regard such individuals as teachers and would not allow them to take part in Service tournaments. Should an airman turn professional without permission he would be outside the pale of Service boxing and would not be countenanced either in competitions or in contests at Service meetings.

The decision of the Association to turn amateur is an important one which has by no means been lightly arrived at. Incidentally it is following the example set by the Army which, in a very short time, has shown that it can turn out amateur boxers capable of taking on the best amateurs in Europe, in fact it supplied three of the eight members of the Amateur Boxing Association's team in last season's European Championships. Beyond this the introduction of amateurism led to a great increase in the number of boxers in the Army and a general improvement in the tone of the sport.

Several reasons have weighed with the R.A.F.B.A. in taking this step. In the first place boxing is the only sport in the Service in which professionalism has hitherto been tolerated officially. In order to get good fights in professional boxing a man must have a "manager"—an individual who in 99 cases out of 100 is entirely out for his own ends. The manager ties the airman down by contract and obviously something is wrong when it is necessary for a C.O. to write to one of these gentry and obtain "permission" for one of his own airmen to box at his own unit tournament.

Again, with amateurism, a boxer has to practise considerable self-denial and endurance, for he gets knocked about a good deal while passing through the early stages and he only receives small prizes. This is good moral training and brings out all that is best in a man. With professionalism the self-denial is compensated for by money prizes. There is an incentive to keep in training and endure hard knocks when one is paid for it and the moral benefit is correspondingly less.

The Association does not expect that its future champions as amateurs will be any more sporting or fight any cleaner than its professional champions of the past, for nothing could be finer than the sporting spirit always shown by the latter. It is, however, confidently anticipated that a far better spirit will be developed among the second-raters, who form the backbone of Service boxing. The "What will I get for it?" attitude so often adopted by the second-rate professional when asked to fight is unpleasant, as is the attitude of the man who will not box so-and-so because it might lower his price in civilian circles. This atmosphere disappears at once with amateurism.

A scheme has been devised whereby professionals may be reinstated as amateurs on their promising never to box professionally again while in the R.A.F. These men will be known as "Service Amateurs" and I believe that already several of the best-known professionals in the Service have expressed a wish to be reinstated under this rule.

Yours faithfully,
G. C. Anne,
Flight Lieut.
Hon. Secretary, R.A.F. Boxing Association.

Manston, 28.12.1925.

AIR AFFAIRS IN PARLIAMENT.

INLAND WATER TRANSPORT.

In the House of Commons on Dec. 21, in reply to a question by Sir F. Sykes, the Secretary of State for Air said that the only power-driven surface craft carried on the establishment of the R.A.F. for employment in conjunction with air operations other than transport were three vessels which were taken over from the War Office for police and defence work on the rivers in Iraq.

These vessels were maintained at Basrah dockyard, where no naval maintenance facilities were available, principally by Indian and local native labour assisted by Air Force personnel.

They were commanded by officers with suitable experience, the remaining deck and engine-room complement consisting of natives recruited locally or in India, while the gun-crews were Air Force personnel who had been trained at Whale Island. No difficulty was anticipated in maintaining suitable personnel with adequate knowledge for handling these river craft.

THE CHAPLAINS' AND MEDICAL SERVICES.

In the House of Commons on Dec. 21, Sir F. Sykes asked the Prime Minister a series of questions relating to the possibility of re-organising and co-ordinating the chaplains' and medical services of the fighting forces.

Mr. Baldwin replied that the matter had been carefully considered by his Majesty's Government and it had been found that no economy in personnel or expenditure would be effected by the amalgamation of the Chaplains' Departments of the three Services.

With regard to the Medical Branches, this question was considered two or three years ago and it was decided that the step was undesirable. A Standing Joint Committee had been set up to discuss matters affecting the Services.

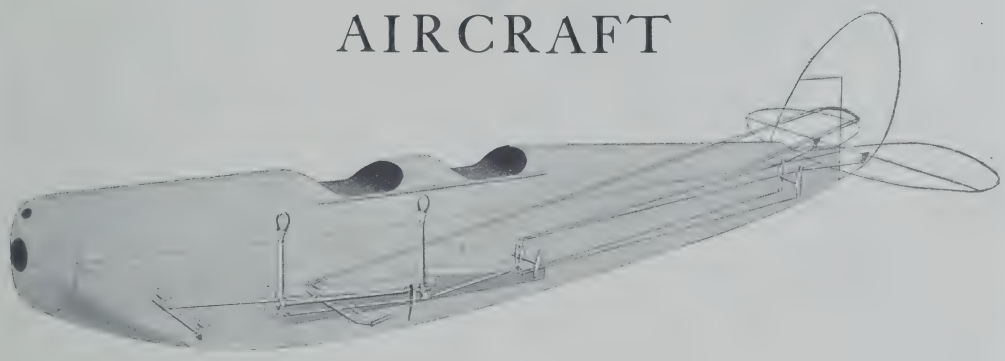
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THE ECONOMICS OF AIR TRANSPORT.—I.

By W. H. Sayers.

At intervals during the past few years the present writer has felt it necessary to criticise—sometimes perhaps rather caustically—the efforts which have been made, with the aid of substantial Government subsidies, to develop "commercial" air transport in the form of passenger-carrying services between London and the Continent. The underlying basis of this criticism, despite the fact that in detail the criticism may have covered a fairly wide range, has always been that the type of service which has been chosen for this form of forced development is one in which the known and admitted imperfections of the aeroplane are given their maximum effect while its useful qualities, such as, for instance, high speed and capacity to operate over ground entirely unfit for rapid surface transport are reduced to the minimum of value by the existence of already well-developed competing transport services.

Put into other words one has held that the failure of air transport, as it is now known to us, is a failure to use the aeroplane for the right purpose and under the right conditions.

Within the past few weeks occasion has arisen for criticising the attitude of that school of thought which holds that the the failure of the present air lines is due to the failure of aircraft designers to produce reasonably satisfactory and efficient commercial aeroplanes. Criticism—at any rate purely destructive criticism—is always easy, and it is just as easy for the writer to criticise Sir Sefton Brancker's ideas as to the ideal commercial aeroplane, as it is for the latter to criticise the design of present machines. Constructive criticism—in vague and general terms—is very nearly as easy, but it is apt, unless it is based on very complete and accurate knowledge of all the factors involved, to be of even less real value than the other type.

What Constitutes Commercial Success.

Commercial success in any undertaking can be attained, and can only be attained, if one can sell some commodity or service at a price at which the public will purchase it, and make a profit on the deal.

In other words an undertaking is successful when the whole costs of the undertaking are less than the total earnings of the undertaking. The whole cost is made up of a number of partial costs, but the general commercial efficiency of the undertaking cannot be measured in terms of cost alone, and most certainly not by any single component of the total cost.

The same service rendered may vary in value through an enormous range, according to the conditions under which it is rendered. The cost of such a service may be so high that under one set of conditions no one can be expected to meet that cost—whereas under another set of conditions the same cost may become of very minor importance. This is very particularly true in the case of transport services.

What Settles Transport Charges.

Transport of one kind or another is a necessity of life under civilised conditions. In the more highly populous and civilised parts of the world, consequently, very complicated and highly-developed transport facilities are available. Under those conditions the charge that will readily be paid for a given transport service is determined, not so much by what could be paid for it if no alternative were available, but by the charges ruling for the alternative services which exist.

In less populous and less highly-developed districts, with inferior alternative facilities, a higher cost for a similar service can almost invariably be borne. Therefore it can scarcely ever be said that the total costs of any particular form of transport are so high that under no circumstance can it be made to pay. The total cost must be considered in relation to all the circumstances, and if it is obviously too high for one set of conditions it by no means follows that it will be too high under all conditions.

It is even more unsafe to treat any one component of cost as a measure of total costs There has been a very strong tendency in the case of air transport to look at the cost of operating the aeroplane as the factor which mainly determines the cost of running an air service, and to say that the aeroplane is inherently too costly to run, and that commercial success therefore cannot be achieved, unless more economical aircraft can be produced. This may be perfectly true so far as one particular service run on one particular system and under certain fixed conditions is concerned. It cannot be true as a general statement, covering all services under all conditions. Actually a less efficient aeroplane—one more costly to run—may prove to be cheaper than the types now in use when the whole costs are considered.

The Cost of Economy.

For instance, consider an air transport service over a 1,000-mile route, running across wild and undeveloped country. Assume that provided the service can operate, traffic may be relied upon to provide a certain minimum revenue. The problem then is how can a service, adequate to carry the assumed traffic, be provided at the minimum total cost.

First assume that the most economical aeroplane, *qua* aeroplane, is adopted. If the orthodox 100 m.p.h. cruising speed is taken, machines weighing about 16 lbs. per h.p., and carrying about 4 or perhaps 5 lbs. per h.p. of pay load will be chosen. The most economical length of stage with such machines is round about 250 miles. If longer stages are flown the fuel weight increases, the pay load decreases, and machine cost per ton mile increases. To give this stage length three intermediate aerodromes with refuelling facilities will be necessary.

The engines in these machines will be run as hard as they are on the present Continental services, so engine failures will be as frequent, and a fair number of intermediate emergency landing grounds, with telegraph or wireless gear, and some sort of stores dumps, will be necessary, in addition to the stage aerodromes. (From European statistics with such machines it may be assumed that about one of twelve trips commenced will result in a forced landing.)

The extent of this ground organisation and its cost are the result of the qualities of the "efficient" type of aeroplane.

Standing versus Running Costs.

Can the cost of this organisation be avoided or reduced? It fairly certainly can. A twin-engined machine, weighing about 11 lbs. per h.p. and carrying about 2 lbs. of pay load per h.p. with fuel for 500 miles could be used. One intermediate aerodrome would then suffice, and a considerable reduction in the number of emergency grounds and stores dumps would be permissible. At the same cruising speed this machine would not load its power plant as heavily as would the "efficient" machine, engine failures should be less frequent, and if they did occur, should rarely prevent the machine carrying on to the next aerodrome. The machine's running costs per ton mile of traffic carried must increase, but in return ground organisation costs are reduced.

Which of these methods will give the lowest total cost for the whole service? This is a question which cannot be answered on general principles. All the conditions must be known, and further one must also know how these conditions affect the whole cost. It is however obvious that in a given case one could estimate the running costs per ton mile of the two different types, and also the initial capital costs of the ground organisations and the annual costs of maintaining these organisations for the two cases.

The sum saved per annum by using the efficient machine obviously varies with the ton mileage flown per annum. If the running cost of the efficient machine is 3s. per ton mile, that of the inefficient one 6s., the saving is 3s. per ton mile flown. If the pay load is one ton, one trip is 1,000 ton miles, the saving on running costs of the efficient machine is 3,000/- or £150 per trip. This is a large sum, but the saving on one trip will not pay for much ground organisation. Suppose the extra cost per annum of the ground organisation needed for the efficient type of machine is £45,000. Three hundred trips per annum will be required before the saving in machine costs equals the extra ground organisation cost. That is up to 300 trips per annum the inefficient aeroplane will give the lower total cost—over that the efficient one begins to score. The question of the relative reliability of the two services will probably alter this relation in favour of the less efficient type, but this effect will not be taken into account.

In other words, the intensity of traffic for which the service is designed is in this case the deciding factor as to which type will prove to be most economical taken over the whole of the operations.

Some Parallel Cases.

This state of affairs has a number of very close parallels in other branches of transport economics. For instance, the power required to move a given load carried by steel-tyred wheels running on a steel track is appreciably less than that required to carry the same load on pneumatic tyres on any road surface yet produced. Consequently purely as a vehicle a railway train is more efficient than any road vehicle. The railway train involves heavy capital costs for the laying of the track and certain minimum annual standing charges for maintaining that track. Unless the traffic available reaches a certain minimum intensity the saving on the cost of running trains instead of road vehicles will not pay for the track costs, and the road vehicle is then the cheaper of the two.

In precisely the same way the electrically driven train costs less to run than the steam driven type, but involves greater capital outlay and higher standing charges. Below a certain traffic density the steam train is the cheaper—above that density electrification begins to pay.

The general law holds for many other than transport undertakings. The purchase and maintenance of highly efficient plant will reduce the costs of running that plant, but will increase the initial outlay and the fixed charges of keeping the plant in working order. The question of whether this extra outlay is justified depends on the extent to which the plant is to be used. If the use is likely to be very small the actual running costs will matter little and a cheap, relatively inefficient plant may be most economical. The purchaser of a motor driven fire engine for the protection of a private workshop presumably does not expect to have to use it often, and

BRITISH ADC AIRCRAFT LTD AIRCRAFT

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Designers and Constructors of "MARTINSYDE" Types of Aircraft.
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120/140 h.p. "AIRDISCO" Aero Engines.

27/60 h.p. A.D.C. "CIRRUS" ENGINE.

The 27/60 h.p. A.D.C. "CIRRUS" Engine was the first British Low Powered Aero Engine to pass the Air Ministry 100 hrs. Type Test, and has been adopted for use in the De Havilland "Moths," with which the Light Aeroplane Clubs are equipped.

The following opinions of "CIRRUS" owners after some months' running should be of interest:

The De Havilland Aircraft Co., Ltd.,
Stag Lane Aerodrome,
Edgware.

21st December, 1925.

Extract.

"I am sure that you have done extremely well in achieving in such a remarkably short time, the production of an engine which to-day is giving literally no trouble at all."

"There is no doubt that the engine is behaving like one with years of development behind it."

London Aeroplane Club,
3, Clifford Street,
London, W.1.

17th December, 1925.

"I enclose a table showing the flying carried out by the London Aeroplane Club from the 19th August to the 30th November on the two D.H. MOTHS fitted with 27/60 h.p. CIRRUS engines."

"From this table you will see that flying was carried out on 72 days and that 729 flights were made resulting in a total flying time of 298 hours 45 minutes."

"We are extremely satisfied with the performance of the two CIRRUS engines supplied by you in the D.H. MOTHS. The only trouble we have experienced with these engines is with the valve seatings, but the modification you made has entirely corrected it."

"I trust that you will find these figures of interest."

Newcastle-upon-Tyne Aero Club Ltd.,
38, Cloth Market,
Newcastle-upon-Tyne.

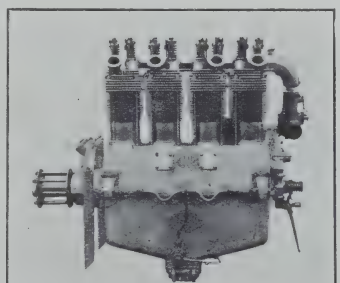
25th November, 1925.

Extract.

"The Cirrus engines fitted to the Machines have proved exceptionally reliable and economical.

The only replacements necessary on the two engines have been two new Cylinder Heads, the Valve Seatings of which were found by the representative of the A.D.C. Aircraft Ltd., when carrying out a modification, to have moved an almost inappreciable amount in the Cylinder Heads. The particular engine in which this very slight defect, which was not noticeable in running, was found had done 49.5 flying hours and 58 hours' total running.

No other replacements whatsoever have been necessary on either engine, although over 100 hrs.' flying has been done."



27/60 h.p. A.D.C. "CIRRUS" ENGINE.

LONDON TO DUBLIN

The recent fine flight by Col. the Master of Sempill (including a 70 miles sea crossing) was carried out with a De Havilland "Moth," fitted with an A.D.C. "Cirrus" Engine.

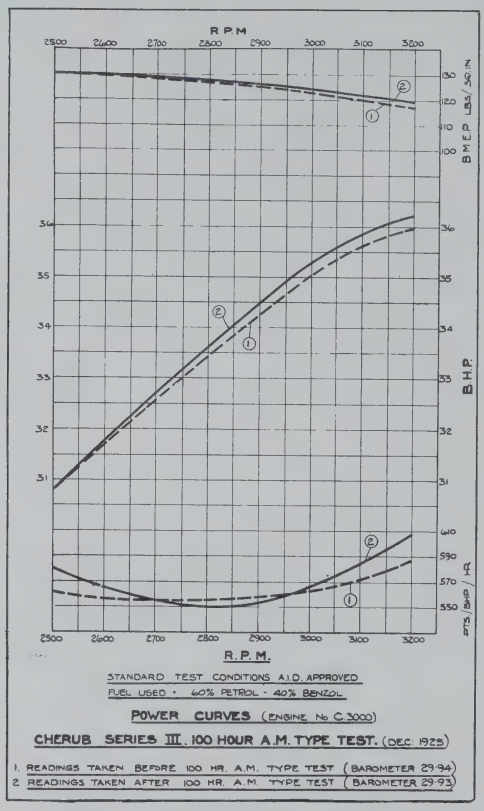
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Cables: "Airdisco, London."



LEADING PARTICULARS OF THE SERIES III CHERUB ENGINE.

Type: Air cooled horizontally opposed twin.
Cylinders: Aluminium head. Overhead valves.
Bore and Stroke: 3.54" x 3.80" 90 m.m. x 96.5 m.m.
Total stroke volume: 75 cu.ins. 1228 c.cs.
Compression ratio: 5.5 to 1.
Power at normal R.P.M.: 33 B.P.H. at 2900 R.P.M.
Power at maximum R.P.M.: 36 B.P.H. at 3200 R.P.M.
Propeller: Direct drive L.H. Tractor.
Lubrication system: Pressure 40 lbs./sq. inch.
Oil pump: Duplex gear, 1 scavenge 1 pressure.
Carburettor: 1 Special Zenith aero model.
Altitude control: Hand operated extra air to diffuser.
Ignition: Dual. Double pole H.T. magneto.
Sparking plugs: 2 per cylinder K.L.G. 14 m.m.
Starter Gear: Impulse starter on magneto.
Weight dry: 95 lbs.
Rated consumptions per hour at normal R.P.M: Fuel: 2 gallons. Oil: 1 pint.

At every flyin
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100 HOURS' OF

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The new Series III C
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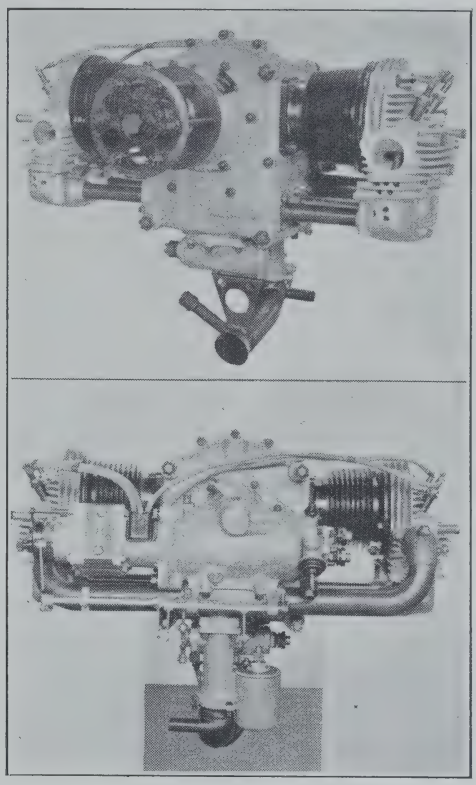
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LED ENGINE

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IMPROVEMENTS EMBODIED IN THE SERIES III CHERUB ENGINE.

1. Bore increased to 90 m.m. and capacity increased to 1228 c.cs.
2. Amended cylinder head design with new type valves and triple valve springs.
3. Extra gas ring and new design scraper ring.
4. Floating bush big end bearing construction with forced feed lubrication.
5. Dual ignition Watford double pole H.T. magneto and two plugs per cylinder fitted K.L.G. new type 14 m.m.
6. Large capacity ball journal bearings to crankshaft.
7. New design crankcase with dry sump, more robust, smaller and more symmetrical.
8. Pressure feed lubrication by engine driven duplex gear pump, 1 suction 1 pressure unit. Filter embodied in the suction system.
9. Rear of engine modified allowing easier attachment of engine mounting.
10. Special Cherub type Zenith carburettor tucked up more snugly to the engine with new float mechanism. Robust 4-bolt flange attachment.
11. Ignition control automatic, interconnected with throttle. Altitude control interconnected with throttle ensuring automatic return to ground position when throttle is closed.

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will not worry over much as to its fuel consumption when it actually gets to work, but he will consider its first cost and maintenance charges.

The London County Council, whose fire engines are used relatively frequently, may be expected however to consider fuel consumption and to be willing to pay a little extra for a fire engine of notably low fuel consumption.

It can therefore safely be said that a decision as to the choice of the type of aeroplane to be used, the methods of using it, the type and complexity of ground and other organisation which may most economically be employed, etc., for a given air transport service can only be made safely if the organisation is considered as a whole, and if some method is available for accurately estimating how the costs of the service will vary with differing conditions.

(To be continued.)

THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

Flying has been very restricted during the week. Saturday was the first time the weather was at all possible and we managed to get in just over six hours' flying. On Sunday it rained all the morning, and cleared up a little in the afternoon to allow about one hour's instruction.

The following members had flying instruction:—Col. Turner, E. S. Brough, C. E. Murrell, E. K. Blyth, A. P. Hunt, V. H. Doree, D. Kittell, H. R. Thomas, L. E. Vincent. The following members flew solo:—P. G. Lucas, Major Beaumont, Mrs. Eliott-Lynn, Sq. Ldr. M. E. A. Wright. The total flying for the week was 7 hrs. 30 mins.

Members are reminded of the Dance at the Suffolk Galleries, Suffolk Street, W.1, on Wednesday, Jan. 13, starting at 9 p.m. Tickets, 10s. 6d., may be obtained from the Pilot Instructors, at the Aerodrome, or at the offices, 3, Clifford Street, London, W.1.

The Lancashire Aero Club.

The weather has been bad; flying has been possible on only Thursday, Friday and Saturday.

Mr. Cantrill gave dual instruction on "LR" to:—A. Jowett (40 mins.), A. Macnair (25 mins.), C. Parker (30 mins.), P. Michelson (20 mins.), C. Colley (10 mins.).

Tests occupied 25 minutes. Total time flown 2 hrs. 5 mins. Five persons had instruction.

The Newcastle-upon-Tyne Aero Club.

Report for week ending Sunday, Jan. 3.—Flying times: "G.EBLX" 9 hrs. 1 min., "G-EBLY" 2 hrs. 32 mins. Total 11 hrs. 33 mins.

The following had dual instruction under Major Packman:—Messrs. H. H. Leech (2 hrs. 45 mins.), J. M. Campbell (17 mins.), A. Bell (15 mins.), J. D. Irving (2 hrs. 2 mins.), L. Smith (32 mins.), J. S. Jardine (15 mins.). Secondary dual: Mr. R. N. Thompson (35 mins.). Solo: Mr. R. N. Thompson (1 hr. 50 mins.).

"A" Pilots: Mr. W. Baxter Ellis (15 mins.), Mr. P. Forsyth Heppell (17 mins.).

Passengers: Mr. Harle (15 mins.), Mr. J. W. Holmes (15 mins.), Mr. Kerr (15 mins.), Mr. W. Walker (15 mins.), Mr. Nicholson (10 mins.), Mr. Kerr, Junr. (15 mins.).

Mr. J. W. Holmes, who will be remembered as first President of the North-East Coast Aero Club, visited the aerodrome on Monday and expressed surprise on seeing the completenesss of the equipment of the Club and was very well pleased with the flight he had with Major Packman. Mr. Holmes is a member of the Yorkshire Club now.

Mr. J. M. Davidson, who has spent the past five years in America and only returned to England on Christmas Eve, visited the aerodrome on Sunday and decided right away to become a member, which he did, and had a 15 mins.' joy-ride in the rain. The members present were very much interested in the descriptions he gave of the manner in which Civil Aviation is carried on in the United States. It was felt that he should feel quite at home in Moths, in spite of all the examinations, tests and certificates required in connection with flying in this country.

The manner in which the exhaust pipe affects the running of an engine had possibly not been fully appreciated previous to fitting a new one to "LX." Major Packman states that the engine now "runs like a Rolls-Royce." This is a distinct improvement upon the "Ford-like rattle" of the old pipe in its later days. It fell off almost at the moment the delivery sheet was being signed in respect of the new one, so that extravagance cannot be charged to the Staff of the Club.

Carburettor trouble was experienced by Mr. Jardine (Mr. J. Bell passenger) when proceeding to the aerodrome on Sunday morning, in his motor-car. Members who observed, on returning to the city a day or two previously, two persons pushing a car in the direction of Newcastle, strongly suspect that the same car had developed similar trouble and was then being assisted by the same crew.

Mr. P. Forsyth Heppell and Mr. N. S. Todd have now received their "A" Licences. (Ex-War Pilots who have qualified.)

Some 40 members and friends attended the New Year's Eve Dance at the aerodrome and spent a very happy time.

The flying record for the Newcastle-upon-Tyne Aero Club since its first machine was delivered on Sept. 15, 1925, is extraordinarily good, considering the arduous weather conditions of the North Country. The following figures speak for themselves:—

In September the flying was as follows:—Dual control instruction: 26 flights amounting to 7 hrs. 5 mins. Joy rides: 24 flights (6 hrs. 24 mins). Solo flying: 9 flights (2 hrs. 10 mins.). Tests: 4 flights (35 mins.). Total: 63 flights amounting to 16 hrs. 14 mins.

October (the second Moth being delivered on Oct. 7) produced the following results:—Dual control instruction: 53 flights (22 hrs. 21 mins). Joy rides: 32 flights (16 hrs. 46 mins.). Solo flying: 11 flights (3 hrs. 15 mins.). Tests: 4 flights (20 mins.). Total: 100 flights (42 hrs. 32 mins.).

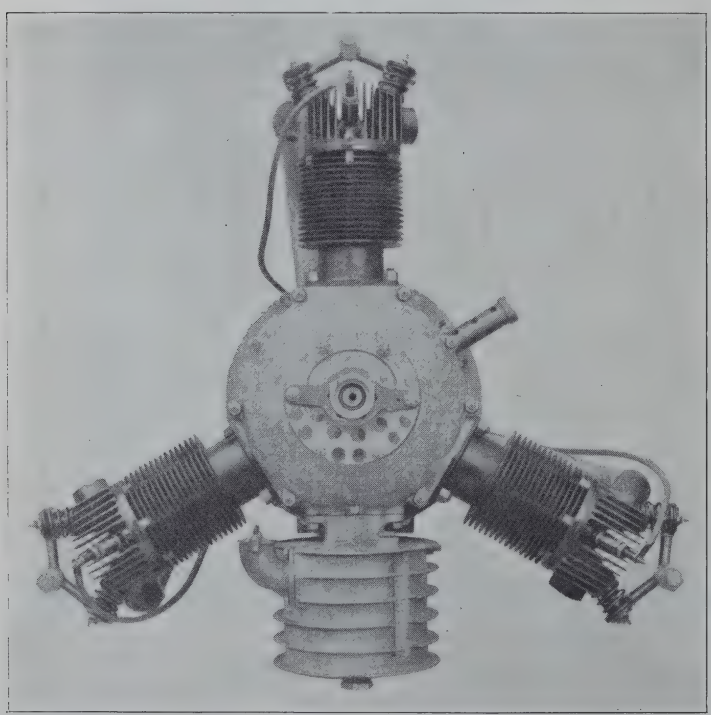
November flying, in spite of the usual bad November weather, but with two machines in working order, was as follows:—Dual control instruction: 109 flights (55 hrs. 41 mins.) Joy rides: 31 flights (6 hrs. 26 mins.). Solo flying: 25 flights (12 hrs. 36 mins.). Tests: 13 flights (1 hr. 20 mins.). Total: 192 flights (80 hrs. 5 mins.). (It is interesting here to note the decrease in joy rides and the remarkable increase in solo flying and instructional flights.)

December, in spite of snowstorms and blizzards and gales, and the fact that one or other of the machines was laid up for a week at a stretch, gave results quite as remarkable. These were as follows:—Dual control instruction: 64 flights (43 hrs. 45 mins.). Joy rides: 19 flights (5 hrs. 9 mins.). Solo flying: 22 flights (10 hrs. 21 mins.). Tests: 15 flights (1 hr. 55 mins.). Total: 136 flights (67 hrs. 20 mins.).

Included in the above under the heading of Solo Flying are flights by members who have now acquired "A" Licences. These amounted in November to 14 flights (4 hrs. 2 mins.) and in December to 16 flights (6 hrs. 10 mins.).

The net totals for the three months and a half are as follow:—Dual control instruction: 252 flights, amounting to 128 hrs. 52 mins. Joy rides: 107 flights (34 hrs. 5 mins.). Solo flying: 67 flights (28 hrs. 22 mins.). Tests: 36 flights (4 hrs. 10 mins.). Grand total: 491 flights (206 hrs. 11 mins.).

These figures are all the more remarkable when it is considered that all the instruction and test flying was done by one instructor, Major Packman, and that the joy ride flights were given by him and Mr. Baxter Ellis, and that one ground engineer, Mr. Brown, kept the machines in excellent flying order. The results are equally complimentary to the De Havilland Company's workmanship and to the A.D.C. Cirrus engines.



THE BLACKBURNE THRUSH.—This photograph shows the new Blackburne Thrush three-cylinder radial engine for light aeroplanes which so successfully passed the Air Ministry Type Test in November last.

The projection beneath the crankcase is the combined oil tank and cooler, which is fitted with an obviously serviceable filler cap. This arrangement is a step towards providing the engine complete as a unit.

The very adequate cooling of the cylinder head—particularly of the valve pockets and sparking plug—are notable. It is doubtless largely this feature of adequate head cooling which enables a 6 to 1 compression ratio to be used on a 80% petrol, 20% benzol mixture.

Specification and a general description of the Thrush appeared in "The Aeroplane" of Dec. 23, 1925.



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CANADIAN VICKERS PRODUCTS.



GETTING OFF.—The Canadian Vickers Varuna (two 200 h.p. Wright Whirlwind engines) about to get off the St. Lawrence River at Montreal.

In THE AEROPLANE of Oct. 14, 1925, the fact was mentioned, in describing a visit to the works of the Canadian Vickers Ltd. at Maisonneuve, Montreal, that this company was engaged on the production of a twin-engined flying boat for fire-supression work by the Royal Canadian Air Force.

This machine was ordered at the end of April. When one saw it on Aug. 3, the hull was nearly completed, and wings, tail unit, etc., were in various stages of construction.

On Oct. 17 the machine, which is known by the type name Varuna, was launched, and before climatic conditions became impossible, it had put in over 40 hours of flying and had given every satisfaction.

Owing to the non-delivery of two Reed airscrews official performance tests could not be carried out, but with temporary airscrews, which incidentally held the engines (two 200 h.p. Wright Whirlwind air-cooled radials) down some 200 r.p.m., the Varuna was taken off fully loaded in 210 yards, and climbed to 4,000 feet in 15 minutes. Naturally, with correct airscrews, these performances will be materially increased as the reduction in r.p.m. corresponds to 12 per cent. of the horse power.

The Varuna was designed to a specification prepared by the R.C.A.F. for a flying boat for use in connection with the suppression of forest fires, its duties being to transport men and fire-fighting equipment to fires already located by the regular aeroplane fire patrol. This made it essential that the machine should be able to get as close to the scene of the fire as possible, which made it necessary to get into and out of comparatively small lakes, surrounded, in most cases, by hills and wooded country. Low landing speed, quick take-off, and high initial rate of climb, are therefore most important features.

The Varuna was designed by Mr. W. T. Reid, who was responsible for the very successful single-engined Canadian Vickers Vedette flying boat. In essential features it is an enlargement of that type.

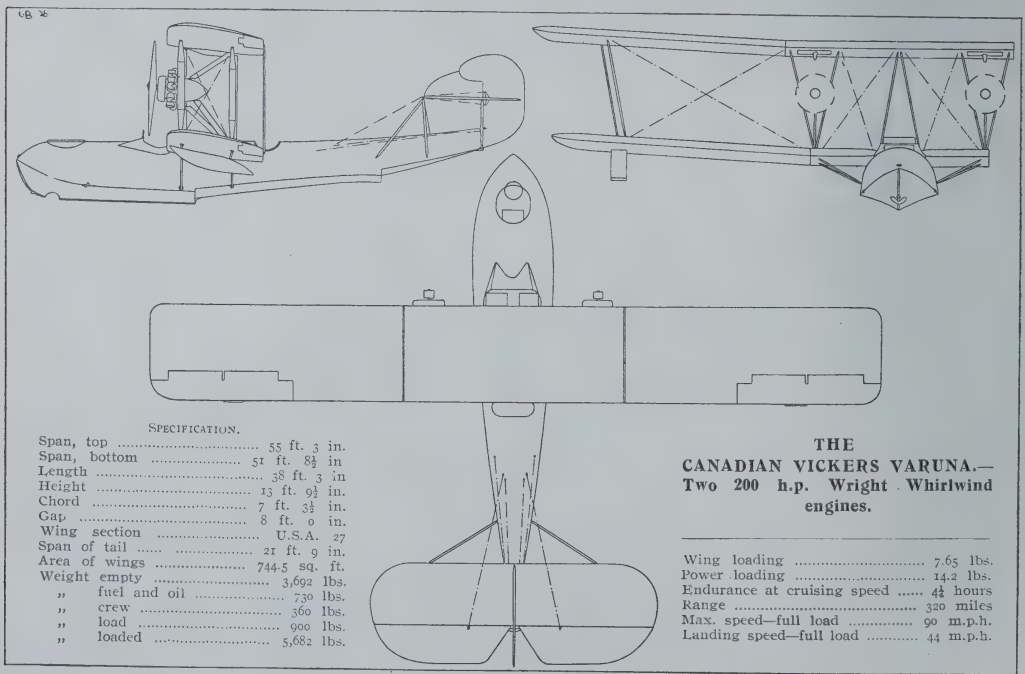
It is a twin-engined flying boat fitted with two 200 h.p. Wright Whirlwind air-cooled radial engines driving tractor airscrews.

The hull is of the semi-flexible, round-top type, and has two steps.

The framework of the hull is of laminated elm. The covering above the chine is of 3-16 inch cedar longitudinal planking, covered with two layers of canvas, and the bottom covering consists of an inner skin of mahogany, laid at an angle of 45°, and an outer layer of cedar planking laid fore and aft with a layer of nainsook in between the two skins.

The hull is built with four watertight bulkheads.

There are four cockpits, as follows:—The forward cockpit is arranged for vertical photography through a hole in the floor as well as over the side of the cockpit; the second, or pilots' cockpit, just in advance of the leading edge of the bottom wing, is fitted with two seats side by side, and complete dual control; the third cockpit is directly under the centre section with seating for two and stowage of fire equipment or auxiliary petrol tank; and the fourth cockpit is in line with the trailing edge of the lower plane, with seating for two and stowage for equipment.

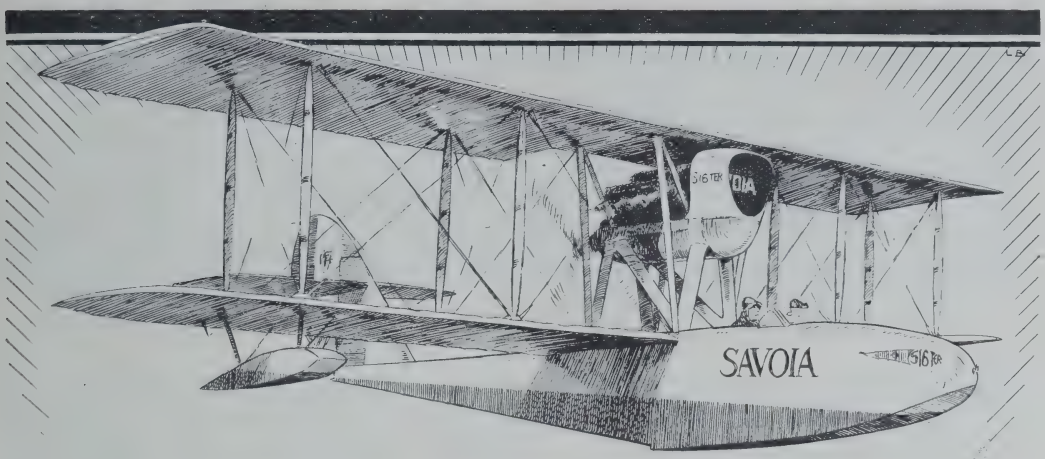


SPECIFICATION.

Span, top	55 ft. 3 in.
Span, bottom	51 ft. 8½ in
Length	38 ft. 3 in
Height	13 ft. 9½ in.
Chord	7 ft. 3½ in.
Gap	8 ft. 0 in.
Wing section	U.S.A. 27
Span of tail	21 ft. 9 in.
Area of wings	744.5 sq. ft.
Weight empty	3,692 lbs.
„ fuel and oil	730 lbs.
„ crew	360 lbs.
„ load	900 lbs.
„ loaded	5,682 lbs.

THE CANADIAN VICKERS VARUNA.—Two 200 h.p. Wright Whirlwind engines.

Wing loading	7.65 lbs.
Power loading	14.2 lbs.
Endurance at cruising speed	4½ hours
Range	320 miles
Max. speed—full load	90 m.p.h.
Landing speed—full load	44 m.p.h.



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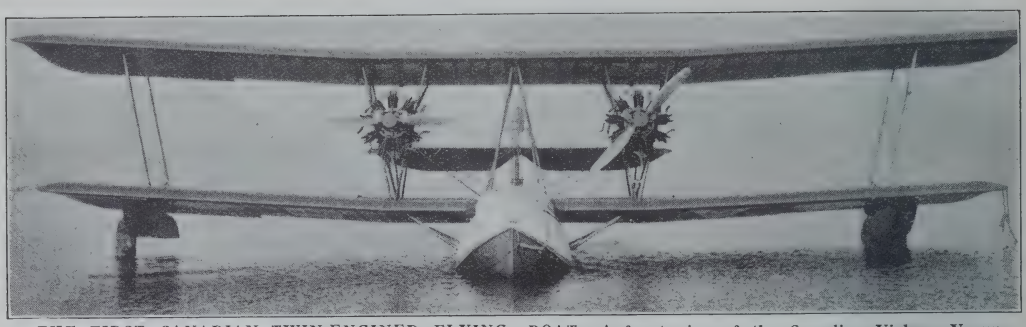
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THE FIRST CANADIAN TWIN-ENGINED FLYING BOAT.—A front view of the Canadian Vickers Varuna fitted with two 200 h.p. Wright Whirlwind engines.

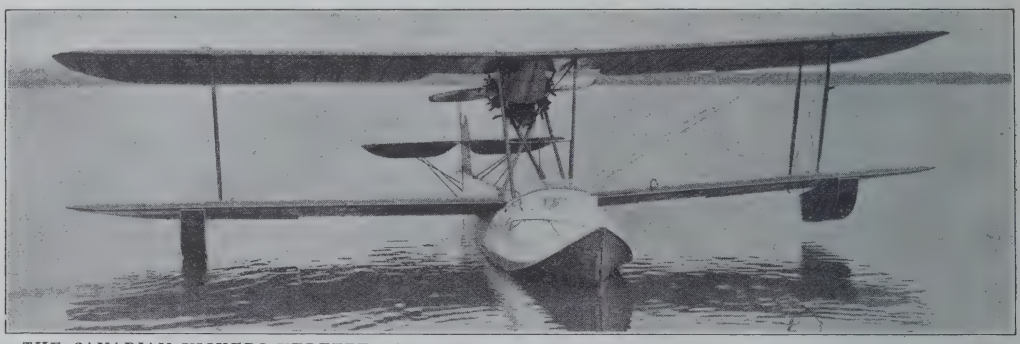
All seats are designed for use with parachutes.

The controls in the pilot's cockpit consist of the usual wheel and rudder-bar. The second set of controls can be thrown out of gear and swung forward to allow of movement from the pilots' cockpit through a door in the bulkhead into the front cockpit. The rudder-bars are both adjustable for various lengths of leg without disturbing the cable adjustment.

All control cables, which operate over large pulleys, are either inside the wings or hull except right aft of the hull where the rudder and elevator cables come out of the hull to run to their respective control levers.

and bottom outer wing sections are interchangeable. The two Wright Whirlwind engines are mounted midway between the wings Each engine is fitted to a standard engine-mounting plate which is bolted to two steel tube struts set in the form of a narrow Vee. This mounting is braced to the top and bottom fittings of the corresponding set of rear struts making a very rigid engine mounting.

In the rear of the engine is carried the oil tank which in effect forms the rear end of the cowling. The main petrol tanks are carried in the top wing immediately over each engine, the fuel supply being entirely by gravity.



THE CANADIAN VICKERS VEDETTE.—A small flying boat designed by Mr. W. T. Reid for fire patrol and photographic work. Four more machines of this type have been ordered by the Royal Canadian Air Force.

The wings are in three sections, consisting of centre section and two outer sections. With the exception of the centre section and engine-bearer struts, all of which are of faired steel tube, there is only one set of struts on either side of the hull. These two sets of outer struts are of spruce.

Top and bottom centre section spars are of steel tube and the outer section wing spars are of solid spruce routed out for lightness.

All wing ribs are of lattice spruce and the entire wing surface is fabric-covered.

Balanced ailerons are fitted to top and bottom wings. Top

The tail unit consists of vertical fin and balanced rudder, with a tail-plane and divided elevators fitted half-way up the fin. The tail plane is adjustable in the air by a lever in the pilot's cockpit and the tail load is automatically balanced by a spring inside the fin.

Apart from the Varuna, Canadian Vickers have, during the past year, built five Avro-Viper land machines, nine Avro-Viper seaplanes, and one Avro-Whirlwind central pontoon seaplane.

Also they have converted the Vedette, which was originally designed for the 200 h.p. water-cooled Viper engine, to take



A CLEAN DESIGN.—The Canadian Vickers Vedette with the 200 h.p. Wright Whirlwind air-cooled engine.

METAL CONSTRUCTION

By the use of Metal for the construction of aircraft, not only is a reduction in structural weight effected, but the advantage is realised of using materials possessing mechanical properties which are known and have small variations in value. The metal structure is furthermore unaffected by climatic extremes. The Aircraft Department of Boulton and Paul, Ltd., have specialised in this form of construction for the past six years, and in the light of the unique experience so gained, the Boulton & Paul System of Metal Construction has been built up.



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

the 200 h.p. Wright Whirlwind radial air-cooled engine. This machine has been given a hard season's photographic and development flying by the R.C.A.F., with most gratifying results, with the result that an order has been received for four more for next season's operations.

The Vedette was originally designed for fire patrol as well as photographic work, but it has proved so exceptionally good for the latter work that it is probable that it will be earmarked for this work in future.

The satisfactory results achieved during 1925, both with the Varuna and the Vedette, is an excellent testimony to the thoroughness of Mr. Reid's designs and Canadian Vickers workmanship, and augurs well for the future development of Canadian-built aircraft.

Mr. Reid is at present engaged on the design of a much smaller single-seater boat for fire protection work, to be fitted with a 60 h.p. air-cooled engine, and this promises to be a very useful and economical machine.—L. B.



ANGLO-AMERICAN.—An Avro 504, built by Canadian Vickers Ltd., for the Royal Canadian Air Force, fitted with the 200 h.p. Wright radial engine and central flo at, thus Americanising the evergreen type 504.

THE BRISTOL CHERUB, SERIES III.

It has been known for some time that the Bristol Aeroplane Co. Ltd., were producing a new and improved version of the well-known Cherub light aeroplane engine. The original cherub was produced at a time when competitions for light aeroplanes with engines of limited cylinder capacity were being promoted, and consequently was made to come within the 1,100 c.c. class. It has since been recognised that this method of rating light aeroplanes is unsatisfactory, and at least the next light aeroplane contest will be rated on a different basis.

With no limitation to the cylinder capacity the Cherub has been redesigned with cylinders of 1,228 c.c. With this increased capacity the engine develops appreciably more power and at the same time should prove definitely superior to the original Cherub in durability.

As may be seen from the photographs reproduced, the new Cherub is essentially similar both in general arrangement and in detail to the original type, so that all the good features of the original are conserved. The alterations embodied in the new Cherub are as follows :—The bore has been increased from 85 to 90 m/m., the stroke remaining unchanged at 96.5 m/m. The cylinder head design has been modified, new type valves and triple valve springs have been fitted.

The pistons are fitted with an extra ring and an improved type of scraper ring.

The big end of the Cherub III is of the floating bush type instead of the roller type, and has forced feed lubrication.

Dual ignition, by Walford double-pole magneto, is used, instead of single ignition, and K.L.G. plugs of the new 14 m/m. diameter type are used.

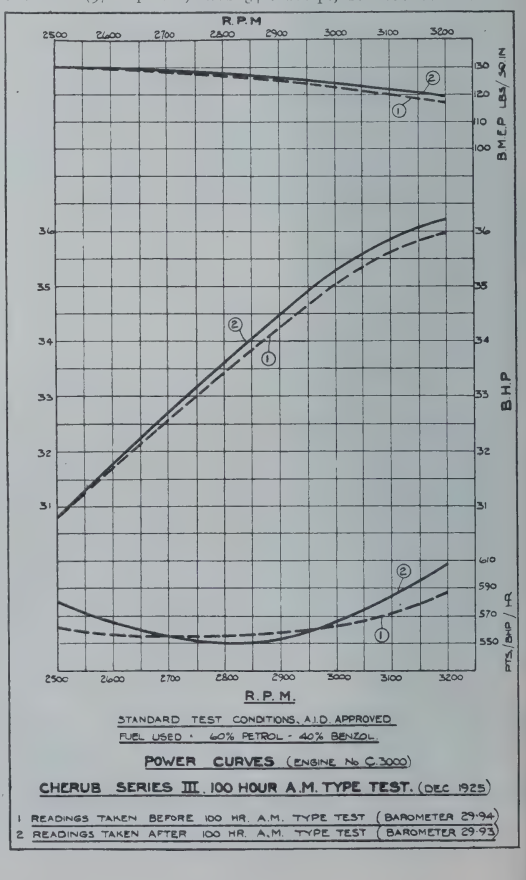
The lubrication system is now of the dry sump type, and the engine has the usual dual oil pumps, one pressure and one scavenger. The crankcase has been redesigned accordingly and is now smaller, more robust, and more symmetrical than the original.

A special Zenith carburettor for the engine, which tucks up snugly to the engine, has been designed and produced. This is very strongly attached to the induction system. The altitude control is interconnected with the throttle so that it is automatically returned to ground level conditions when the throttle is closed. In addition the ignition control is interconnected with the throttle.

Finally the rear of the engine has been modified so that it is considerably easier to attach to the mounting than was the earlier model.

The Cherub III has recently passed the Standard Air Ministry type test—which is the same for light aeroplane engines as for other aero-engine types. This test included 1½ hours' run on the brake for the taking of a power curve, 40 hours on the brake in ten-hour runs at 90 per cent. full power and normal r.p.m.; 50 hours on a calibrated airscrew, also in ten-hour runs at 90 per cent. power and normal r.p.m., nine hours on the brake at 90 per cent. power, followed by one hour at full power all at normal r.p.m.; one hour on the brake at high speed (3,350 r.p.m.); 10 mins. slow running (890 r.p.m.), one hour at high power (36.9 b.h.p. at 3,190 r.p.m.) and a final 1½ hours for the final power curve.

The power curves are reproduced herewith, and it will be seen that there is a distinct increase in the engine's output on the final curve, showing a steady improvement in output with time. The output achieved during the major part of the test (9/10 power) was 34.2 b.h.p., so that the nominal



Paris to Teheran in 34 Hours

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Write for our Pocket Lubrication Index, which gives prices and indicates the grades recommended for every lubricating need.

A Bleriot-Spad 56, a commercial type of aeroplane, fitted with a Bristol "Jupiter" engine, recently flew from Paris to Teheran, a total of 3,428 miles, in 34 flying hours, an average of 101·5 m.p.h.

To ensure the efficient and reliable running so essential in a commercial machine, the "Jupiter" engine was lubricated with—

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AS AN EXAMPLE OF WIDE RANGE OF DESIGN, CONTRAST THE ABOVE TWIN ENGINED MACHINE WITH THE **SUPERMARINE NAPIER S4** MONOPLANE DESIGNED AND CONSTRUCTED FOR THE SCHNEIDER CUP RACE, 19.5.

SUPERMARINE

ENGLAND.

rating of the engine at normal r.p.m., is a conservative figure. The average fuel consumption during the 100 hours was 192 galls., or at the rate of .586 pints per b.h.p. hour, and the oil consumption was 68 pints, or .026 pints per h.p. hour.

At the completion of the test the engine was stripped and examined, and found to be in excellent general condition, and the wear on the major wearing parts was negligible.

The main dimensions of the Cherub are given in the table appended.

Type	Air-cooled horizontally-opposed twin.
Bore and stroke	90 m/m. x 96.5 m/m. (3.54 ins. x 3.80 ins.)
Piston displacement	1,228 c.c. (75 cub. in.)
Compression ratio	5.5
Normal output	33 b.h.p. at 2,900 r.p.m.
Maximum output	36 b.h.p. at 3,200 r.p.m.
Fuel consumption (normal r.p.m.)	2 galls. per hour.
Oil Consumption (normal r.p.m.)	1 pint.
Fuel recommended	60 per cent. petrol, 40 per cent. benzole.

AVIATION IN BRITISH GUIANA.

During the latter part of 1924 the Real Daylight Balata Estates Ltd. of Georgetown, British Guiana, purchased a Fairey, Series III, seaplane equipped as an ambulance for use in the transport of the sick from their balata collecting depot at Apoteri down to Georgetown, a distance of approximately 270 miles.

During the season previous to the acquisition of the seaplane a large number of their employees died, both up-country and on the river, whereas with prompt medical attention the majority would be living to-day. Since the seaplane has been acquired there has been no case of serious illness. Apparently the presence of the seaplane has exerted a moral influence over the staff of the company, as during the last season there were no calls for the seaplane to fetch invalids. [Auto-suggestion can do much, and probably the alternatives "Fly or die" have scared the malaria microbes out of the staff of the firm.—C. G. G.]

On the other hand there were two occasions in the same period when the machine was chartered to carry out an exchange of Government wireless operators at the W/T station at Apoteri. In both cases the relief was taken up and the sick operator brought down to Georgetown hospital.

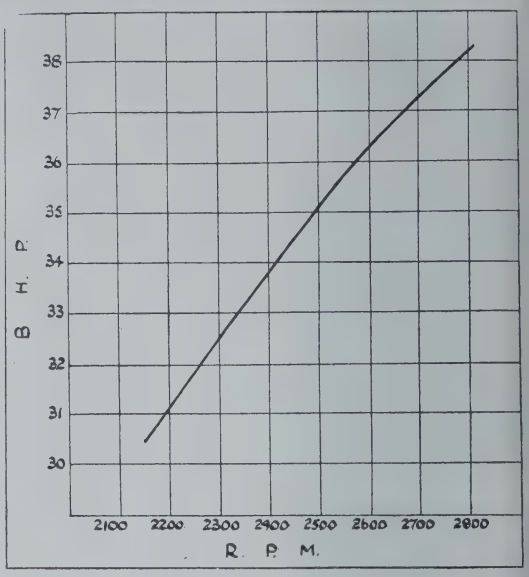
The company runs no scheduled or regular service but uses the machine when and as required for its own business purposes. On one or two special occasions it has been chartered by the local Government for other work.

One of these occasions was in March, 1925, when the seaplane was used to photograph the flooded coast during the heavy rains, embracing an area roughly 20 miles long by two miles wide.

Later the official responsible for making the new hydrographic survey of the lower reaches of the Essequibo River was flown over the area concerned. He reported that during the journey he learnt more concerning the lie of the islands and creeks than he would have done in nine to twelve months by ground and water methods.

Flying was started in February, 1925, and up to the beginning of November the machine had made 54 flights with a total flying time of 70 hours.

The return trip to the Rupununi River, and the Apoteri depot has been covered five times. The time taken for the total 540 miles has varied between 5¼ and 6¼ hours' flying time.



The Power-Curve of the Blackburne Thrush.

The Company has two other smaller depots on the Essequibo River, one about half-way between Apoteri and Georgetown, and the other about 75 miles from Georgetown. Numerous flights have been made to these places on business.

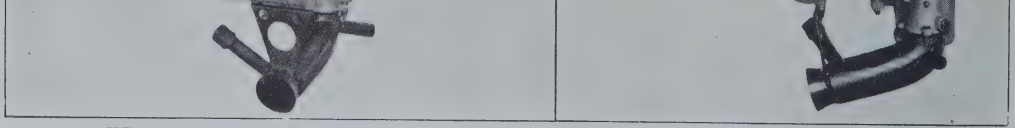
On Oct. 8 the Managing Director, Mr. E. E. Hodgkins, was taken to the Rupunini depot, this being his first visit. At 09.30 hours next morning Mr. Hodgkins was back in Georgetown, having got through an enormous amount of important business in a remarkably short time.

By other means of transport it would have meant four or five weeks of travelling by hand-paddled boats, necessitating the negotiation of dozens of falls and rapids and the expenditure of a sum greater than the cost of the flying visit.

The seaplane is equipped with W/T gear and contact was maintained with the Government stations at either end of the route throughout the trip.

At times it has been found rather difficult to get off the smooth, fresh water when there is no wind at Apoteri, with full load. By using one of the smaller stations half way up Essequibo River as a fuelling station it is possible to get off at Apoteri with a reduced amount of petrol and to refuel at the half-way station.

With proper ground organisation and wireless collaboration there seems to be no reason why a seaplane should not fly anywhere in British Guiana. Owing to the jungle-like nature of the country the only civilisation is to be found on the rivers, and so there is never any need for a seaplane to go "jumping the orchard" as a correspondent aptly puts it.



THE LATEST EDITION.—The Bristol Cherub III, which is now giving 36 h.p. at 3,200 r.p.m.

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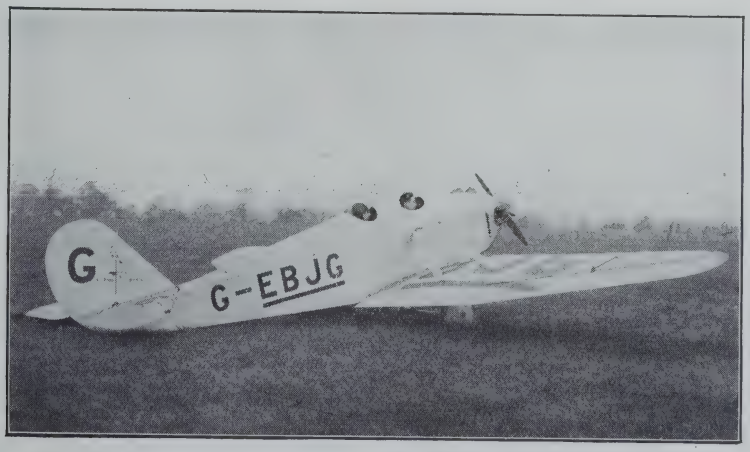
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 6; Tuesday, 6; Wednesday, 1; Thursday, 8; Friday, 6; Saturday, 7; Sunday, 6.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 21, passengers 39, freight 6 tons.

AIR UNION:

Paris—London: Machines 4, passengers 8, freight 2 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 3, passengers 2, freight 1½ tons.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES: Nil.

Total number of trips by British Machines: 21, carrying 25 passengers. Foreign Machines: 7, carrying 10 passengers.

Comparative Figures:

For week ending Jan. 3:

Machines, 28; Passengers, 39; Crews, 31; Total personnel, 70.

Corresponding week, 1925:

Machines, 22; Passengers, 49; Crews, 25; Total personnel, 74.

Corresponding week, 1924:

Machines, 35; Passengers, 58; Crews, 57; Total personnel, 115.

Corresponding week, 1923:

Machines, 41; Passengers, 109; Crews, 80; Total personnel, 189.

Corresponding week, 1922:

Machines, 15; Passengers, 30; Crews, 23; Total personnel, 59.

Corresponding week, 1921:

Machines, 21; Passengers, 15; Crews, 25; Total personnel, 40.

Croydon Notes.

The past week of gales, rains and floods has played havoc with the Continental Air Service. On Tuesday there was no service at all, and on Wednesday the only machine to get through was a D.H.34 to Amsterdam, piloted by Mr. Barnard. The fact that his time from aerodrome to aerodrome was just under two hours shows the strength of the wind.

One noticed on Saturday that the big sheds at the aerodrome were full to overflowing with Goliaths and W.8s, etc. Quite what will happen in the summer when the new W.10s arrive, one does not know. Also when the Argosies and the new D.H.66s are delivered, accommodation will be hopelessly inadequate, and there is as yet no signs other than foundations, of the new buildings on the other side of the aerodrome.

The D.H.66, of which five are on order, is a large, three-engined machine, with either Jupiters or Jaguars. It will carry 14 passengers, and there will be a large freight hold.

One gathers that the general opinion of those who know is that the design is extremely promising, and well up to the high standard which the De Havilland Company have always set in both commercial and R.A.F. machines.

A ground expedition consisting of Col. Shelmerdine and Mr. Wolley Dod is to make a ground survey of a part of the Kantara-Karachi route. The Burchall-Minchin expedition selected from the air a number of likely-looking landing grounds, which they charted. They did not, nor were they expected to, land on these as it was impossible to tell from the air what the surfaces were like. The new expedition is purely supplementary to the other, and is visiting the projected landing grounds from the sea.

The Hall and Brenard Wireless Syndicate went into voluntary liquidation on Dec. 24. They have been forced to do this owing to the fact that certain people to whom they had supplied large quantities of components failed to pay their debts. Mr. Hall is now setting up as a wireless consulting engineer, at 10, Manor Gardens, Purley. He has had heaps of experience of wireless in the last 2½ years, and anyone who wants a good wireless set made for them and maintained should certainly apply to Mr. Hall.—G. D.

The Schoolboys' Exhibition.

Sir Sefton Brancker on Saturday opened the Schoolboys' Exhibition at the Horticultural Hall, Westminster. Why no one ever thought of such an exhibition before, one does not know, for it is obviously just the thing for the Christmas Holidays and the *genus* boy will go anywhere to see the wheels go round. To this exhibition they are going in such numbers that on Saturday and on Monday it was almost impossible to move.

The chief attraction seems to be the Air Ministry's exhibit. Here there is a De Havilland Moth complete with an A.D.C.-Cirrus engine, and under the guidance of Mr. Matthews, a recently taught De Havilland pilot, queues of large and small boys examine the controls, instruments, etc., of the machine.

In connection with this exhibit the De Havilland Company are offering substantial prizes, which include an hour's free dual instruction, and a flight to and from any point within 100 miles of Stag Lane, for the best essay on the future of private flying. Full particulars can be obtained at the Exhibition.

There are photographs and telegrams lent by Vickers Ltd. relating to the Atlantic, Australian, and other big flights.

There are a couple of Napier Lions on view, but one is inclined to think that Mr. Jones has not done his best in view of the fact that elsewhere one can see "70 Lions in one show." Nevertheless the partially disembowelled Lion, which works and shows how the wheels go round, is a huge attraction. This same engine was at Wembley during the six months in which the British Empire Exhibition was open and ran daily from 9 a.m. till 10 p.m., without any attention—other than that of the electric motor which made it revolve.

In view of recent fine performances the Bristol Jupiter engine, on the R.A.F. stand, is a popular exhibit, as also is the actual Puma (lent by A.D.C. Aircraft Ltd.) on which Sir Sefton Brancker, Mr. Elliott and Mr. Cobham flew to Burma and back.

The whole of the Air Ministry's Exhibit is in charge of Major Villiers, and one can strongly recommend schoolboys, old and new, to visit this interesting show.—G. D.

The Flight Towards the Cape.

Mr. Alan Cobham, Mr. A. B. Elliott, and Mr. Emmott, still continue to make good progress. Their speed now depends on the rate at which benzole supplies can be transported to the petrol depots.

The party arrived at Mongalla, in the Southern Sudan, on Jan. 2. More than half of the flight had then been completed.

"THE STRATEGY AND TACTICS OF AIR FIGHTING."

The following letter has been received:—

Sir,—A baboo, when reporting a railway accident, telegraphed this purple description of the scene: "Wagons here, wagons there, wagons nowhere! Engines inscrutably intermingled." Your contributor Berkeley's remarks (in your issue of Dec. 23) about my book, "The Strategy and Tactics of Air Fighting" (Longmans, 6s.), show that his ideas upon air fighting have suffered the same fate as those engines. They are inscrutably intermingled.

In general I am content that your readers should judge for themselves the potency of Berkeley's ginger-pop. I need ask your permission to recall only one question which Berkeley puts and which alone indicates the level of his aeronautical understanding.

"What is there," he demands, speaking of air defence, "to prevent the enemy machines flying at a height equal or in excess of [*sic*] that of the defender?"

If, after taking thought and remembering that the enemy machines are heavy, fully-loaded bombers, while the defending machines are high-performance, single-seater fighters, Berkeley really finds himself unable to hit upon the answer to his question, and if he still desires to know the answer, I recommend that he should go upstairs and ask his governess.

(Signed) OLIVER STEWART.

THE ROYAL AERONAUTICAL SOCIETY.

On Thursday, Jan. 7, at 6.30 p.m., Prof. A. S. Sutton Pippard, M.B.E., D.Sc., F.R.Ae.S., will read before the Royal Aeronautical Society a paper on "The Experimental Stress Analysis of Framework, with special reference to the Problems of Airship Design." Prof. Pippard is well known as an authority on the stressing of aircraft, not only in this country but throughout the world.

During the war he was intimately concerned, first on behalf of the Air Department, Admiralty, later the Air Board and Air Ministry, with the official checking of aeroplane strengths. In conjunction with Capt. J. L. Pritchard, now Honorary Secretary of the R.Ae.S., he published a book—"Aeroplane Structures"—which is a standard work on aircraft strength calculations. For some period after the war he was a member of the firm of Ogilvy and Partners, consulting engineers, and more recently he has been engaged as a member of the professional staff at Cardiff University College.

This last appointment has given to him the opportunity of carrying out certain very laborious experimental investiga-

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tions into the stresses in a redundantly-braced framework with the object of checking the accuracy of certain assumptions which—if valid—will render the calculation of the strength of a normal rigid airship frame a practical design process. It is with the results of these experiments that his paper will deal.

The meeting takes place in the Society's library, and the time—6.30 p.m.—should be especially noted, together with the fact that future meetings will generally be held at this time and not at 5.30 as heretofore.

STUDENTS' SECTION PROGRAMME.

Thursday, Jan. 28, 6 p.m.—In the Library. Informal Discussion on "Air Travel." Mr. Handley Page, Fellow, in the Chair.

Saturday, Feb. 6.—Visit to Croydon Aerodrome. Meet at Trust House Hotel entrance at 3 p.m sharp. Capt. H. R. Gillman, Associate Fellow, will conduct the party round.

Thursday, Feb. 18, 6 p.m.—In the Library. Lecture and Discussion "Bernoulli and Aerodynamics." Mr. M. S. Hooper.

Saturday, Feb. 27.—Visit to the De Havilland Aircraft Company's Works at Stag Lane Aerodrome.

Thursday, Mar. 11, 6 p.m.—In the Library. "Experimental Flying from the Pilot's Point of View," by Flg. Off. R. L. Ragg.

Thursday, Mar. 25, 6 p.m.—In the Library. Lecture and Discussion. "Stalled Flying," by Mr. S. S. Hall.

Thursday, Apr. 8, 6 p.m.—In the Library. Lecture (to be announced later).

Further visits are to be arranged for May and June.

It is requested that those Students who wish to take part in any visit will kindly let the Secretary know as early as possible, so that the necessary arrangements can be made.

PERSONAL NOTICES.

DEATHS.

BAKER.—On Jan. 1, at 58, Carlton Mansions, Stamford Hill, N.16, and of 76, Wool Exchange, E.C.2, Flt. Lt. Edward Savery Baker, late R.A.F., aged 41 years.

MAIR.—On Jan. 2, at a nursing home, after a long illness, G. H. Mair, eldest son of Fleet-Surgeon G. Mair, R.N., Aberdeen, aged 39.

WATHEN.—On Dec. 27, at Port Said, through an accident, Plt. Off. Edward John Hulbert (Jack), R.A.F., only and dearly-beloved son of Maud Wathen and the late Charles Trevelyan Wathen, aged 21.

Mr. Wathen entered the R.A.F. in July, 1925, with a short service commission. He was posted to No. 4 F.T.S., Abu-Sueir, for a course of instruction.

FORTHCOMING MARRIAGES.

DODDS—NEILSON.—A marriage has been arranged, and will shortly take place, between Brian Mawson (Major, late R.A.F.), son of Mr. Edwin Dodds, Home House, Low Fell, and Margaret Helen, daughter of the late Mr. W. B. Neilson and Mrs. Neilson, formerly of Lintz Green, Co. Durham.

AIR SURVEYS.

MR. R. C. KEMP, who was responsible for the Air Survey of the Irrawaddy Delta, the Tenasserim Forests and the Yenangyaung River in Burma, is now completing a survey of the Anglo-Saxon Petroleum Company's property in North Borneo.

A further contract has been made with the Government of Sarawak for the survey of a large area of land.

The Pilots employed on the work are Mr. F. P. Raynham and Capt. Gaskell.

The photography has been in charge of Mr. Andrews and will now be augmented by Captain J. Durward (R.A.F. Reserve).

Information concerning surveys and the cost of such work may be obtained from the Secretary:—

C. ACTON DODDS, F.C.I.S.,
Air Survey Company, Ltd.,
3, Copthall Buildings,
Copthall Avenue,
LONDON, E.C.2.

Telephone—London Wall 9850.
Telegrams—Cervelle, London.

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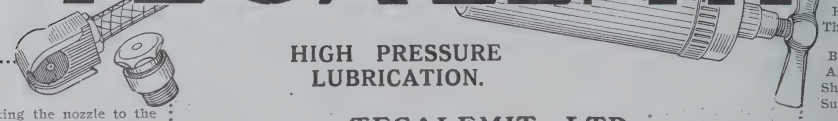
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Edited by C. Grey

Vol. XXX. No. 2. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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THE FASTEST LIGHT AEROPLANE IN THE WORLD:—A photograph of the C L.A.3 built by the Cranwell Light Aeroplane Club. It has been cleaned up since the Lympne Meeting, and the Bristol Cherub has been cowled more neatly and a Fairey-Reed duralumin airscrew has been fitted. It has a speed of 100 m.p.h. and is undoubtedly the fastest light aeroplane in the World.

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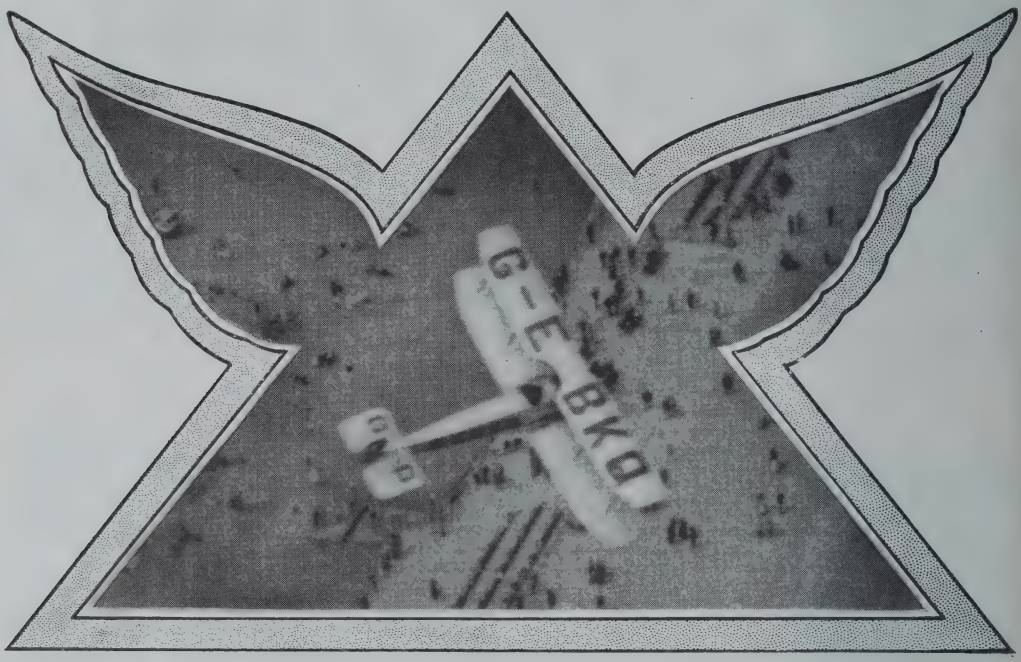
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THE AEROPLANE

VOL. XXX. No. 2.

Incorporating
Aeronautical Engineering

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14 Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months, 32s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
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ON DISGRACEFUL PEACE.

There is about one thing in this World which is worse than wars and rumours of wars, and that is disgraceful peace. For nations as well as for individuals there are various ways of procuring peace. But procuring peace and securing peace are two different things.

Much as the boy is father to the man, so a collection of boys at school is an epitome of a collection of nations. For, despite our boasted civilisation, humanity as a whole is in such an infantile state that a collection of nations, despite the civilised philosophy of a minute minority of their inhabitants, will always act through their mass psychology like a collection of schoolboys.

At school the one person who is assured of peace is the good-natured powerfully-built sportsman who is slow to anger but hits very hard when he has to hit. Next to him perhaps may come the equally strong bully. But in the end he is beaten-up, to use the American phrase, either by a combination of the small boys whom he has bullied or by the aforementioned sportsman who find that it is his duty to give the bully a hiding. At the other end of the scale come the little weaklings who are so feeble that it is not worth anybody's while to attack them and their only lapse from peace comes from squabbling among themselves and then they are as a rule too weak physically to do one another much harm.

In between these two extremes comes the large fat flabby pampered youth, generally with a taste for trading with the other people in the school, who makes some pretence of being an important person but has neither the muscular nor mental development to put up a fight and who generally procures peace by putting up his hands and saying that it is unfair for anybody to attack a defenceless person. But sooner or later the fat and defenceless youth comes in for a bad time. Either he is hammered by the bully or he is set upon by the more malicious of the small fry. And to procure peace and quietness he bribes his assailants with the treasured possessions in which he had the habit of trading.

That way of procuring peace is not only the most disgraceful but it is also in the end the most expensive, and it does not secure peace.

An Analogy Among The Nations.

Among nations a well armed well organised country is assured of peace for itself and can command peace among those smaller nations which might otherwise disturb the peaceful traffic of humanity.

Such has been more or less the part played by England in the past. England has never wantonly attacked another country. We have fought many wars but always either in self-defence or in the defence of less powerful nations which have been attacked by bullies. That is to say we have pursued the one consistent policy of maintaining the balance of power in the World, in that we have always placed ourselves on the side of the weaker nations.



THE AIR FORCE OF THE FUTURE.—Aircraft Apprentices of the School of Technical Training (Apprentices) at Halton. The entry of January, 1923, are seen in process of inspection by Air Vice-Marshal Sir Philip Game, K.C.B., D.S.O., Air Member for Personnel on the Air Council, on passing out of the School. With Sir Philip Game (on the left) are Flying Officer Christie and Flying Officer Vosper, with Group Captain Mitchell and Group Captain Rees behind them. The high standard of the apprentices is indicated by their physiognomy, dress, and deportment. It is to be hoped that, in spite of the present Government's threatened policy of misguided economy, these men will have modern and efficient aircraft on which to exercise their skill.

Some fifty years or more ago the peaceful and amiable and patriotic German people were misled by a self-imposed square-head Prussian aristocracy into becoming the bullies of Europe and have suffered bitterly in consequence.

For centuries the small weak nations of the Balkans and Eastern Europe have fought among themselves like small boys at school and have been the victims of the Turkish bully or the Russian bully or the Austro-Hungarian bully or the Prussian bully. And to-day although they have been liberated from the big bullies they squabble among themselves just like small boys at school.

Of late Europe has been threatened with the advent of another bully by the rise to military power of the French nation which, by bribing them with munitions of war, is collecting to itself a sort of a following of among the little nations of Central Europe, just as a bully does at school, by bribing the small boys with his support in their own squabbles.

Now the part played by a nation in this similitude of school life depends on the policy of the Government with which it is blessed or afflicted at a time of crisis. Sooner or later the racial characteristics of the people of the nation will come out on top, but it is possible for the policy of a Government to cause a nation to act temporarily in a manner which is different from or opposed to its national temperament.

We English are faced to-day with a crisis of this nature. We have the choice of being the captain of the school, head of the games, the person who will never be attacked by anybody, or of being the fat commercially-minded youth who endeavours to buy peace at any price.

To adopt another simile, we may play the part of the strong man armed or that of the fat and well seeming merchant whose wealth protects him till he comes up against primitive humanity which has nothing to lose and everything to gain.

That Locarno Spirit.

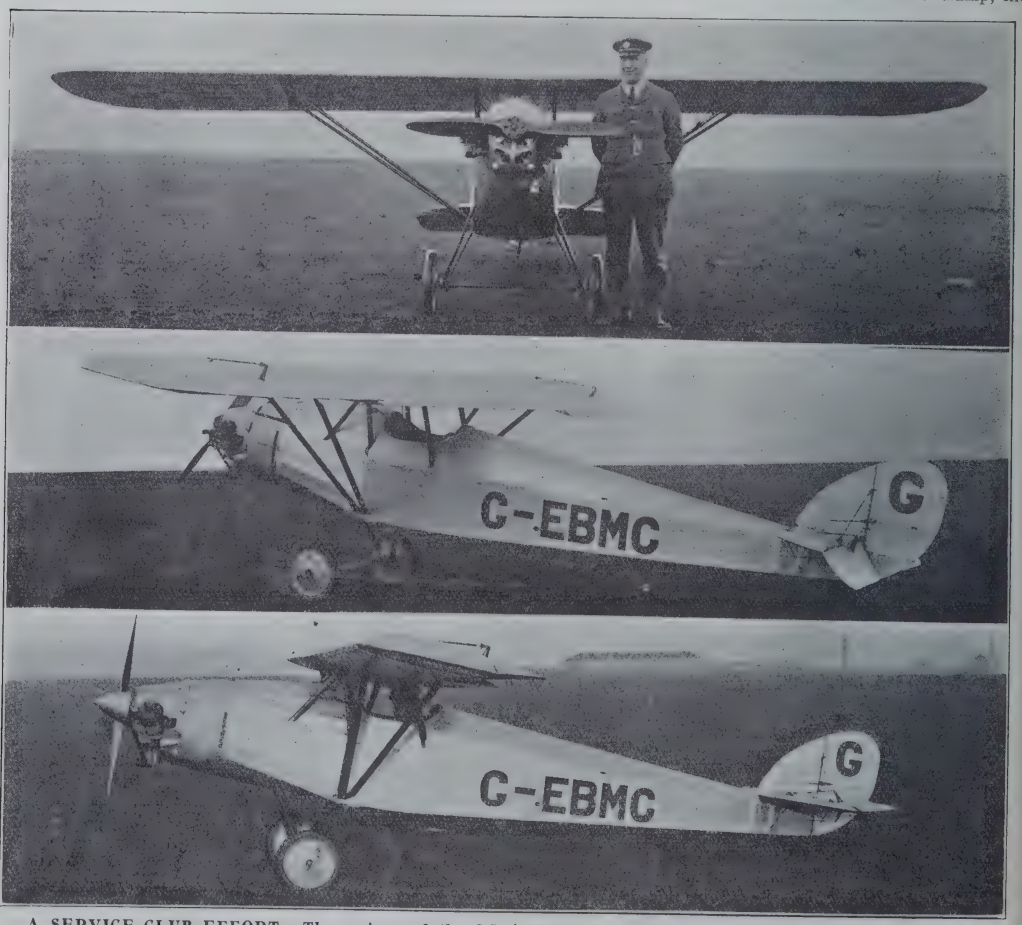
What has placed us in this position is the Treaty of Locarno and what is called by politicians and newspaper people, the Locarno spirit. In Parliament and in the Press a distinct effort is being made to humbug the people of this country into a belief that the Locarno spirit means peace. In a sense it does. To some extent it procures for us a guarantee of peace as between the nations which have signed the Treaty of Locarno. But it does not secure for us peace with our racial enemies to the East of that agglomeration of nations which have signed that Treaty.

As a temporary measure the Treaty of Locarno is a good thing. It may give a feeling of security in Western Europe which may induce the big-money interests of the World to extend credit and improve trade. And the fact that England is a partner in this limited League of Nations is a guarantee of peace within the League, so long as England is an armed power.

But those who believe in the false doctrine of the comity of nations will do well to remember that England has never been so great or so powerful or so secure or so wealthy or so happy as she was in those great days when the policy of Splendid Isolation was pursued under Queen Elizabeth acting with the avice of Lord Burleigh and under Queen Victoria acting with the advice of Palmerston and Beaconsfield and Salisbury.

Lookers-on see most of the game, and the opinion of our Nordic relatives on the other side of the Atlantic, seeing us as they do in something very like a true perspective, is worth much at the present day. The American nation deliberately holds itself aloof from European politics. And the intelligent American, who at heart is deeply attached to the English nation, cannot understand why the British Empire does not hold itself aloof from European politics just as does America itself.

To the American Europe means just the Continent of Europe. It does not include England. The Nordic American, who is the only American who counts, classifies humanity, very much as does the sailor in the foc'sle of a tramp, into



A SERVICE CLUB EFFORT.—Three views of the C.L.A.3 monoplane (Bristol Cherub), designed and built by the Cranwell Light Aeroplane Club. In the lower photograph the machine is seen fitted with a Fairey-Reed metal airscrew. The Club finds that a wooden airscrew is an expensive luxury, especially for flying in rain, when, as a member says, it costs about "£9 a shower."

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Scandewegians, Dutchies, Frenchies, Dagoes and niggers. He admits the Scandinavians, the Dutch and the Germans and some kinds of Frenchmen more or less as men and brothers. The rest he treats very rightly as inferiors. And so the American cannot quite understand how it is that we English mix ourselves up with all these queer people on the Continent.

There is something to be said for concerning ourselves with Continental affairs because, if we are to play the part of the Captain of the School, we cannot afford to let the Continent of Europe be upset either by internal fighting or by invasion from the East. But viewed from the purely mercenary point of view the Continent is of very little use to us.

France buys nothing worth considering from us, Spain and Italy buy less, the assorted small nations of Central and Eastern Europe have no money with which to pay for what they would like to buy. And even a reconstructed Germany shows us but little profit on a trade balance.

Our real possibilities for trade development lie within our own Empire and, in spite of the high import tariff, among our relatives in the United States. The rest of our trade can be done with South America and the Far East.

For practical financial purposes the whole of Europe could be laid waste without our being any the poorer. But we still have the moral obligation of keeping the peace in Europe. And we have the still greater obligation of defending ourselves against any possible aggression from the Continent.

Doubtful Politics.

Now this is precisely where our present Government is forcing us to doubt its intellectual capacity or its political honesty. So far as we in the aeronautical community are concerned the members of the Government who affect us directly are Mr. Baldwin the Prime Minister, Mr. Churchill the Chancellor of the Exchequer, and Sir Samuel Hoare the Air Minister.

None can doubt the true patriotism or the personal honesty of any of these Ministers. And each in his way has shown himself to be a very able man. But the present policy of His Majesty's Government as a whole makes one doubt whether they have the strength of mind or foresight which is necessary to uphold the power of England in the present crisis.

Nobody doubts the need for national economy in these days. Mr. Churchill, who should rightly be regarded as the founder of England's Air Power, is faced as Chancellor of the Exchequer with the need to find many millions of pounds with which to subsidise the Coal Industry.

There is no space available here in which to discuss the affairs of the coalfields. One can only state one's personal belief that if the great dealers in coal dealt honourably with the working colliers and if the directors of coal mines had the intelligence to work their mines by modern methods, the Coal Industry would not only be self-supporting but extremely profitable. The fact remains that Mr. Churchill has got to find that money somewhere because the Government had not the pluck to face either a strike of colliers or the bankruptcy, and consequent nationalisation, of the collieries.

The nation as a whole is taxed as heavily as it can stand, because, unlike France and others of our twenty-two allies, we are endeavouring to pay our debts to America. Therefore the money for the colliers has to be found by economising in other directions. And the Colwyn Committee, into whose hands the famous Geddes axe has been given, has been appointed to study the means by which certain Government expenditure can be decreased to find that money.

Vested Interests.

The Colwyn Committee has considered the Admiralty. And the British Navy, which the deluded British Public still regards, though to a somewhat mitigated degree, as the real defence of the British Empire, has dug in its collective toes and has refused to abate anything of its expenditure. Consequently the amount which the Colwyn Committee is able to save on Naval expenditure is only a subject for derision.

Yet it must be obvious to anybody of intelligence that if the British Navy were only half its present size it would still be more than able to fight and beat any other navy in the World. So far as Europe is concerned the German fleet has ceased to exist, the French and Italian fleets never did exist, and no other European nation has a fleet at all. Japan cannot fight us in home waters, America never will fight us. And so far as the Pacific is concerned, if there is any naval row, we and America together can ultimately account for Japan on and under and over the water. But at the present rate of progress Japan's air force will soon be in quite a different class.

But there are so many vested interests wrapped up in the Navy that no committee, whether headed by a Geddes or a Colwyn, dare make any sweeping reduction. All the power of the great armament firms is behind the Navy.

It is true that to a limited extent the great armament firms are also interested in the construction of aircraft. But the total production of aircraft in a year would not amount to the price of a third-class cruiser. Compared with their interests in shipbuilding, marine engine work, big gun construction, the manufacture of shells and naval equipment generally, aircraft work is a mere flea-bite to what is commonly called the Armament Ring. And apparently the big chiefs of the armament firms do not yet fully understand that in the long run it would pay them better to throw the whole of their political weight in favour of aircraft construction.

The Axe at The Air Ministry.

The Colwyn Committee is now considering the case of the Air Ministry. And, among those who know, the statement is openly made that the Air Estimates, which should in the natural course of the expansion of the Royal Air Force amount to a matter of £24,000,000 for 1926-27 is to be cut down from the £21,000,000 of last year to a mere £16,000,000 or £17,000,000.

That is to say a matter of £4,000,000 or £5,000,000 is to be taken away from our First Line of Defence and is to be given to our provedly inefficient colliery managers and other non-effective persons.

This cutting down was foretold by Sir Samuel Hoare in a recent speech when he explained and attempted to excuse the Government's new policy, which is that instead of going on with the expansion of the Air Force, on the lines laid down when the Air Force was first officially recognised as our First Line of Defence by Mr. Bonar Law, the expansion shall be postponed in order to effect economies.

Here one may recall that the expansion was first announced by Mr. Baldwin himself and that the precise lines of expansion were arranged by Sir Samuel Hoare. They were confirmed by Lord Thomson under a Labour Government. And they have been re-affirmed by Sir Samuel Hoare since he returned to office.

As a first principle it was established that for home defence purposes our Air Force should be at least as strong as the next strongest air force of the World. A great parade was



FOLLOWING ON.—Aircraft Apprentices of the School of Technical Training (Apprentices), R.A.F., Halton, marching past the saluting base on the occasion of the Inspection by Sir Philip Game of the passing-out term.

For the benefit of any readers of "The Aeroplane" who may not have seen it, the R.A.F. standard which is flying at the saluting base is described in Order-in-Council, 24/3/21, as "Of light blue, in the dexter canton the Union, and in the centre of the fly of the flag three roundles super-imposed red upon white upon blue."


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made of the statement that we should never go to war with France but the principle was laid down that we *must* have an air force as strong as that of France.

We even allowed that one squadron of our Air Force might be counted as the equivalent of a squadron and a half of the French air force. After making all allowances we fixed on 52 squadrons as our minimum for home defence alone, with another 25 squadrons or so for service overseas and for the Fleet Air Arm. And a programme was fixed by which the expansion should take place within a stated number of years.

A Political Revoke.

To-day Mr. Baldwin and Mr. Churchill and Sir Samuel Hoare, all of whom have affirmed and re-affirmed their faith in Air Power, are deliberately going back on their public utterances and their confessions of faith just as all sorts of little politicians have gone back on their words so many times in our past history. The men in whom we had come to believe as statesmen are almost forcing us to regard them as politicians.

The French Air Force is expanding according to the original French programme. The Italians, thanks to the driving force of Mussolini, are building up a real air force. But we are proposing to retard our programme of expansion so that in a year or two instead of being equal among our peers, let alone being Captain of the School as we should be, we shall have sunk again to the position of a third-rate or fourth-rate air power.

Cutting down expenditure on the Air Force to any considerable extent can only mean one thing, that is, cutting down expenditure on the production of new aircraft for the new squadrons, cutting down expenditure on the re-arming with new aircraft of existing squadrons, and cutting down expenditure on the production of new and improved experimental machines and cutting down expenditure on research.

We cannot cut down the amount of the personnel, so we cannot cut down the cost of pay and maintenance of personnel. We cannot cut down expenditure on works and buildings, for the personnel must be properly housed and they must have their proper workshops and training establishments. We can only cut on aircraft production.

A Pre-War Principle.

Long before the outbreak of war in 1914, Mr. Churchill, who was then First Lord of the Admiralty, laid down the principle that a strong Flying Service could only exist if it were backed by a strong and financially sound Aircraft Industry, which should not only be capable of supplying immediate needs for the equipment of the existing Service but should be able to carry on experimental work in the production of new and improved types of aircraft and should also be capable of rapid expansion in time of war.

The War 1914-18 proved that Mr. Churchill was right. Technical progress and an Aircraft Industry which is sound financially are the foundation on which the strength of any air force must be built.

After the War, when the Air Force was being reconstructed, Minister after Minister confirmed this principle. And the result has been that to-day we have in this country an Aircraft Industry which is the most firmly established in the World, with perhaps the exception of the French Industry,—which has been spoon-fed with enormous Government subsidies paid out of the money which France owes to those Allies which saved her from destruction during the War.

Undermining the Air Force.

This new policy of cutting down expenditure on aircraft production and research means if not the bankruptcy of the existing Aircraft Industry at any rate its reduction to a skeleton of its proper self.

There are those, among the people who ought to know, who say that officials at the Air Ministry are already advising certain firms in the Aircraft Industry to get out of the aircraft business and look for some other means of subsistence, as there will be no orders for them in the approaching years. Certain firms whose types of aeroplanes and engines have been firmly established will no doubt get enough orders to keep their workshops going in a precarious way. Others are financially strong enough to shut down their workshops entirely and just sit and wait for two or three years until a Government arrives which pursues a bolder policy or until a war breaks out which forces us to embark on a great new scheme of aircraft production.

But such a cutting down and shutting down of aircraft factories can only have one effect. It can only mean the undermining of the strength of the Royal Air Force. It means that the flying personnel of the R.A.F. must carry on with the obsolete and obsolescent aeroplanes and engines with which they are afflicted to-day.

Many of those machines and many of those engines are of designs which were actually produced very nearly ten years ago. And in a well ordered air force, with aeronautical science advancing as it is advancing (in America for example), no squadron should be using any aeroplane which was designed more than two or three years ago.

Organising Disaster.

If the Government pursues its present policy it means that in two years' time we shall have a splendid force of the best trained pilots and the best trained mechanics in the World compelled to operate with entirely obsolete material. Our aeroplanes and our engines will be objects of contempt to our Continental neighbours and of derision to our relations across the Atlantic.

And it means that in the event of the outbreak of war we shall be pitching our men into the air to be shot down in flocks just as the flying men of the old R.F.C. on their obsolete ineffective B.E. biplanes, designed by the Royal Aircraft Factory, were shot down just ten years ago by German aviators on the greatly superior products of Mr. Anthony Fokker.

Our aviators in such an event, will have been murdered by Government cowardice or Government stupidity, just as certainly as so many of our closest friends were murdered in 1915 and 1916 by the weakness or credulity or stupidity or knavery of the politicians of that period. The "murder charges" of 1916 should not be forgotten.

And furthermore if such a time should come we shall find ourselves, as we were in 1914-15, incapable of re-establishing ourselves in the air for several years. We may still have our aircraft factories. Bricks and mortar and steel girders endure. But the skilled hands and trained brains which we should now be amassing in our aircraft factories as the foundation on which to build an adequate Air Force and the Air Power of the British Empire, will have been dispersed in all kinds of other industries.

The men thus dispersed may be recalled to aircraft work should war come. But the hands will have lost their skill, the brains will merely have retained the knowledge of to-day and will not have acquired that knowledge of aerodynamic science which is increasing so rapidly in other parts of the World. We shall be obsolete, out-of-date, finished.

The Alternative.

Undoubtedly, thanks to "our land's long suffering star," English staying power and English brain power will rebuild under stress of war what has been destroyed in time of peace. We shall regain our supremacy in the air at immense cost of blood and treasure. But we might build it up at so little expense to-day if we maintained the air policy which has been laid down by the politicians of the past few years.

If Mr. Baldwin and Mr. Churchill and Sir Samuel Hoare are the men which some of us still hope they are they will continue that policy, and the expansion of the Royal Air Force in men and material will continue. But if they are merely the politicians which some people would have us believe them to be, let them take the responsibility of paying in future years in the blood of their fellow-countrymen for the few millions which they are prepared to hand out to coal-owners and colliers to secure for themselves a disgraceful political peace.—C. G. G.

THE FLIGHT FROM IRELAND.

Col. the Master of Sempill left Stranraer (whence he had flown earlier from Belfast) on Wednesday, Jan. 6, and flew to Stag Lane in six hours. The machine was a De Havilland Moth with an A.D.C. Cirrus engine.

There was an extremely strong head wind, but in spite of this he made good progress. He landed at Southport on a sandbank which was surrounded by water and filled up with petrol carried in tins in the passenger seat. He landed here by design in order to avoid being surrounded by crowds. He took off again a few minutes later and flew to Shotwick, where he refuelled.

Thence in very bad weather he started again and as it was getting dark and he was uncertain of his petrol level he landed in a field at High Wycombe and again refuelled from tins. Thence he flew to Stag Lane.

Altogether it was a remarkable performance and shows the general handiness of the De Havilland Moth and the A.D.C Cirrus.

Colonel Sempill had no assistance when landing away from aerodromes and he filled up and started the engine by himself. Both he, the De Havilland Company Ltd. and A.D.C Aircraft Ltd. deserve congratulations on a most noteworthy flight with a notable machine and engine.

THE FLIGHT TOWARDS THE CAPE.

Mr. Alan J. Cobham, Mr. Elliott and Mr. Emmott arrived at Jinja, in Uganda, on Monday. They were delayed at Mongalla for a week waiting for benzol.

They have now covered nearly two-thirds of their outward journey. Having got over the initial difficulty and having got their fuel supplies right to suit the Jaguar engine, a highly-successful, high-speed return flight in the approved Cobham manner may be expected.

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FRESH AVRO ENTERPRISE.

In the face of the well-based rumours to the effect that there will be little or no Air Ministry money for the construction of new aircraft this year there is the more satisfaction in recording examples of energy and initiative in the Aircraft Industry itself. Nothing could be more satisfactory than that the Avro firm, which pioneered the construction of aircraft when the great manufacturers of England regarded aeroplanes with scorn, should display continued initiative some twenty years after its founder, Mr. A. V. Roe, began his aeronautical experiments.

Naturally A. V. Roe and Co. Ltd. are not anxious to publish abroad all their plans but one gathers more or less indirectly that their programme of new and experimental machines includes a single-seat fighter with a Napier Lion engine, a two-seater with a Napier Lion, and a further modified type designed for high performance as a general purpose machine. There is also in the programme a two-seater general purpose machine with a Rolls-Royce Condor.

All these machines are being built entirely independently of the Air Ministry's experts and therefore cannot be put on the Secret List, however much the Air Ministry might like to conceal the fact that machines are being built in this country which must almost certainly be superior to those built to Government specification. Nevertheless in the interests of the constructors themselves it is well not to give away too much about their machines until they have actually flown and proved their capabilities.

But it is certainly in the interest not only of the individual firm but of the Aircraft Industry as a whole that the World at large should know that even though our politicians may cut down our aircraft appropriations British manufacturers still have the energy and initiative to spend their profits of the past on going out after new business in the future. If such sporting efforts do nothing else they do at any rate show our official experts that they cannot hinder British commercial enterprise and cannot make a corner in the Aircraft Industry by limiting orders to a few firms which they hope to keep under their own control for the aggrandisement of their own offices.

In addition to the aforementioned machines the Avro people are engaged on a new type of training machine to use an engine of comparatively low power. About this engine nothing may be said at the moment beyond the fact that it is doing very well indeed on its preliminary tests.

Over and above all this the firm is going ahead on the building of three Auto-Giros—one with a Le Rhône, one with a Lynx, and one with a Bristol Cherub.

The moving spirits in A. V. Roe and Co. Ltd., Sir William Letts, Mr. John Lord and Mr. A. V. Roe, are to be congratulated on the bold policy on which the firm has embarked. With such able technical people as Mr. Roy Chadwick, and Mr. R. J. Parrott at Hamble, and Mr. Hubble and Mr. R. H. Dobson in Manchester, there can be no doubt about the continued success of their products.

THE RULES OF THE SCHNEIDER TROPHY CONTEST.

A meeting of the F.A.I. was held in Paris on Monday to discuss a proposed change of rules in the Schneider Trophy contest. The French and Italians proposed that machines should carry a useful load of 400 kilos (900 lbs.), which is about equal to six passengers.

The Americans have for the past five years developed a fast light type of racer which we on this side of the Atlantic have, so far, been unable to beat. Much in the same way the French have developed a light, fast and agile type of female lawn tennis player, which the English and Americans have failed to beat. But imagine the wrathiness of France if next year we tried to alter the rules of the Women's Singles Championships on grass by saying that all competitors must weigh more than 100 kilogrammes and thus bar the great Suzanne.

And yet that in effect was what the French and Italians tried to do. Fortunately for the sportsmanship of the World the proposal was defeated. Otherwise the result might have been somewhat as depicted below.

The date for the contest is Oct. 24-26, at Hampton, Va. One understands that there is still a chance of a postponement until April 1927. Should the race take place in October Britain will not compete. Should the race be postponed we will send a full representative team.

The N.A.A., which is ostensibly the governing body of air sport in America, were quite willing to postpone the race. But as they are now apparently the governed body of air sport (their Committees being well sat on by members of the Navy and Army) they have to do as they are told. And if they are told by the Navy that they may not postpone the race they cannot very well do so.

After all, one cannot blame the U.S. Navy for wanting to win the Trophy outright and get rid of all the trouble and expense of building and flying new machines year after year. The U.S. Navy stood down in 1924 and refused to claim a fly-over when our and the Italian challengers failed to appear. They gave us a fair chance of beating them in 1925 and we failed. So there seems no reason why they should make any more concessions to us or Continental countries. And we should not be sportsmen if we expected them to do so.

THE DEVELOPMENT OF THE AUTO-GIRO.

A company is in process of formation in this country for the building and selling of auto-giros, with Senor de la Cierva as the moving spirit.

Meanwhile three auto-giros are being built by A. V. Roe and Co. Ltd. One will have a Le Rhône engine, another will have a Lynx and the third, which is a conversion of the Avis. will have a Bristol Cherub.

George Parnall and Co. are also building an auto-giro with a Bristol Cherub engine.

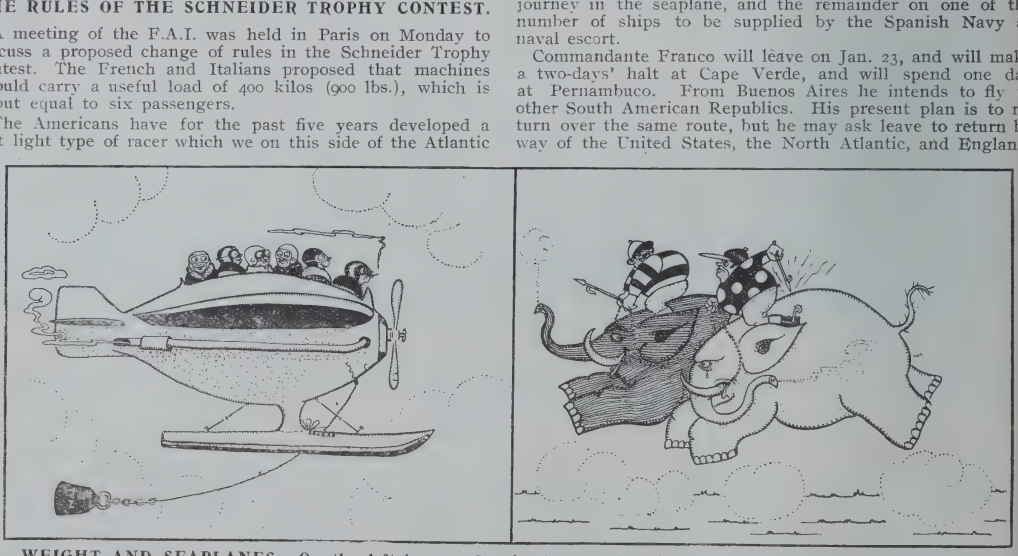
In Spain two auto-giros with 300 h.p. Hispano-Suisas are nearing completion. These are expected to have a performance about equivalent to that of a Bristol Fighter.

Mr. Frank Courtney is next week demonstrating to the French at Villacoublay the auto-giro on which he gyrated at Farnborough.

SPAIN—SOUTH AMERICA.

Commandante Franco, of the Spanish Army, intends to make an attempt to fly from Spain to Buenos Aires on a Dornier Wal flying boat equipped with two 450 h.p. Napier Lion engines. He will be accompanied by Capt. Ruiz de Alda, a navigation and wireless specialist, and one mechanic. Ensign Duran, of the Spanish Navy, will make a part of the journey in the seaplane, and the remainder on one of the number of ships to be supplied by the Spanish Navy as naval escort.

Commandante Franco will leave on Jan. 23, and will make a two-days' halt at Cape Verde, and will spend one day at Pernambuco. From Buenos Aires he intends to fly to other South American Republics. His present plan is to return over the same route, but he may ask leave to return by way of the United States, the North Atlantic, and England.

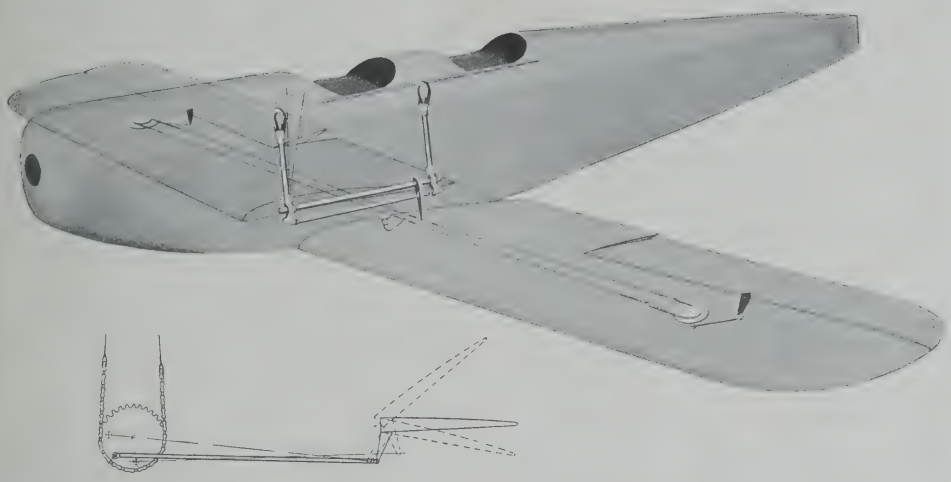


WEIGHT AND SEAPLANES.—On the left is seen Spry's view of what the French and Italians think a racing seaplane should look like. On the right is seen the French Grand Prix being run on what appears to be modern French ideas. Note the exhaust from the trunks.

This announcement is the second of a series dealing with

DESIGN AND CONSTRUCTIONAL

FEATURES OF DH AIRCRAFT



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AILERON CONTROL

¶ The de Havilland patented system of aileron operation utilises the principle that unequal movement—to a certain predetermined extent—of the upturned and downturned ailerons on an aeroplane gives better and lighter control than equal movement of both ailerons.

¶ At the higher end of the speed range lighter control is obtained without any sacrifice of efficiency, and at slow speeds more effective control without yawing tendencies is achieved and maintained even beyond stalling angle.

¶ The device is incorporated on all modern de Havilland types, and is used, under licence, by the leading British and Foreign Aircraft Constructors.

¶ *The application of the system to the "MOTH" is illustrated in the above diagram: the directness of the cables and absence of parts liable to cause wear, such as pulleys and fairleads, should be noted. The smaller sketch shews the method employed to cause the upturned aileron always to move through a larger angle than the downturned one.*

THE DE HAVILLAND AIRCRAFT CO., LTD.,
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THE ROYAL AIR FORCE.

The London Gazette

Jan. 5.

General Duties Branch.—Flt. Off. H. R. F. Baxter is promoted to the rank of Flg. Off. (June 19, 1925).

Obs. Off. W. H. Dunton is placed on the retired list on account of ill-health (Jan. 6); Plt. Off. H. W. P. Stewart is transferred to the Reserve, Class A (Dec. 23, 1925); Flg. Off. B. P. Jones is transferred to the Reserve, Class C (Jan. 4); Plt. Off. on probation E. G. Rosling relinquishes his S.S. comn. on account of ill-health (Jan. 2); Flt. Lt. W. J. Dew, M.B.E. (Capt., Queen's Royal Regt.), relinquishes his temp. comn. on retirement from the Army (Jan. 1).

Stores Branch.—Plt. Off. B. W. Hemsley is confirmed in his appointment and is promoted to the rank of Flg. Off. (Nov. 25, 1925).

Reserve of Air Force Officers.—Sq. Ldr. H. R. Raikes, A.F.C., is promoted to the rank of Wing Cdr. (Jan. 1).

The following are confirmed in rank (Dec. 30, 1925):—Flg. Off. H. Lawson, Plt. Off. A. Prescott.

Flg. Off. C. B. M. Dale is transferred from Class C to Class B (Dec. 5, 1925); Flg. Off. H. Soulsby resigns his comn. (Dec. 23, 1925). The commission of Plt. Off on probation J. F. O. Coleman is terminated on cessation of duty (Dec. 19, 1925).

Princess Mary's R.A.F. Nursing Service.—Staff Nurse Miss G. R. Jones is placed on the retired list on account of ill-health (Dec. 31, 1925).

Appointments.

Week ending Jan. 11.

General Duties Branch.—Group Captain R. C. M. Pink, C.B.E., to R.A.F. Depot pending disposal on transfer to Home Estab., 15/12.

Wing Commanders A. S. Barrett, C.M.G., M.C., to School of Army Co-operation, Old Sarum, pending taking over command, 14/1. W. L. Welsh, D.S.C., A.F.C., to Station H.Q., Kenley, to command, 11/1. S. W. Smith, O.B.E., to H.Q., Cranwell, for administrative duties, 21/1.

Squadron Leaders M. Henderson, D.S.O., to R.A.F. Depot on transfer to Home Estab., 20/12. H. A. Tweedie, O.B.E., A.F.C., to R.A.F. Depot, 1/1. H. M. Probyn, D.S.O., to R.A.F. Depot on transfer to Home Estab., 20/12. W. B. Farrington, D.S.O., to R.A.F. Depot on transfer to Home Estab., 18/12.

Flight Lieutenants P. E. Maitland, A.F.C., to R.A.F. Base, Calshot, 24/1. A. Chapman, to I.A.A.D., Henlow, 19/1. E. J. Cuckney, D.S.C., to School of T.T. (Men), Manston, 8/1. F. J. W. Mellersh, A.F.C., to C.F.S., Upavon, on transfer to Home Estab., 12/1. W. T. S. Williams, D.S.C., to remain at R.A.F. Depot instead of to School of T.T. (Men) as previously notified. H. E. Searson, D.F.C., to No. 4 Sqdn., S. Farnborough, 15/1.

Flying Officers J. G. Murray, to R.A.F. Station, Donibristle, 8/1. G. N. P. Stringer, to No. 39 Sqdn., Spittlegate, 11/1. F. B. Robinson, to R.A.F. Depot, 11/1. O. R. Pigott, to No. 2 F.T.S., Digby, 14/1. J. B. Townend, to Record Office, Ruislip, 19/1. W. C. Adams, to R.A.F. Depot on transfer to Home Estab., 5/12.

Medical Branch.—Wing Commander J. MacGregor, M.C., M.D., to R.A.F. Hospital, Halton, to command, 7/1.

Flight Lieutenant A. E. Barr-Sim, M.B., to Superintendent, R.A.F. Reserve, Northolt, 30/1.

Flying Officer D. B. Smith, M.B., to Electrical and Wireless School, Flowerdown, 11/1.

An Inspection at Halton.

Air Vice-Marshal Sir Philip Game, K.C.B., D.S.O., R.A.F., Air Member for Personnel in the Air Council, on Jan. 7 inspected the 1923 entry of Aircraft Apprentices at the School of Technical Training (Apprentices), Halton, on their passing out.

In the course of his Report, the Commandant, Air Vice-Marshal C. L. Lambe, C.B., C.M.G., D.S.O., R.A.F., said that this entry was the third to complete the course at Halton. The following awards had been made:—Cadetships, six; recommendations for Corporals' advanced course, eight. The results of the final examination had been:—Aircraft Apprentices classified Leading Aircraftsmen, 64; classified AC.1., 223; classified AC.2., 98; failed, nine.

Air Vice-Marshal Sir Philip Game, presenting the awards given by the Air Ministry in various classes, congratulated the Commandant, Staff and Instruction, and the Apprentices themselves on their work. He said that the Apprentice Wing from Cranwell was to be moved to Halton next September. He told the Apprentices to adopt as their motto, "Be Thorough," and said that every man in the R.A.F. had a real responsibility, as a badly turned-out job might lead to disaster.

R.A.F. Reserve Officers.

Officers in Classes B., B.B., C., D., and D.D. of the Royal Air Force Reserve are reminded hereby that they ought to report in writing to the Secretary of the Air Ministry on Jan. 1 every year. Those who have not already done so should write at once.

Recruits Wanted.

Recruits are still needed for No. 601 (County of London) (Bombing) Squadron, Auxiliary Air Force, which is commanded by the Lord Edward Grosvenor.

The terms of service are similar to those of the Territorial Army and the recruits must be skilled tradesmen. fitters, carpenters, armourers, blacksmiths, coppersmiths, electricians, wireless operators, and men of similar trades.

The headquarters of the Squadron are in Elverton Street, Westminster.

A Sequel to the Cairo-Kano Flight.

The Times correspondent in Cairo, in a communication dated Jan. 5, states:—

Sq. Ldr. Arthur Coningham, who commanded the air detachment which flew from Cairo to Kano and back, sails from Port Said to-morrow for Nairobi, *via* Mombassa, in order to attend the conference of the Governors of Kenya Colony, Tanganyika, and Uganda, at which the possibilities of African airways, and particularly that from Kisumu to Khartum, will be discussed.

The Health of the R.A.F.

In submitting his report on the Health of the Royal Air Force during 1924, Air Vice-Marshal David Munro, C.B., Director of Medical Services, R.A.F., says that, compared with previous years, the rates of admission to hospital, invaliding, and number of sick daily, and the number of days' sickness per head, are the lowest figures so far recorded.

The number of sick daily in the whole force per ratio of 1,000 strength is shown in the analysis as 24.6 in 1924, as opposed to 27.0, the average for the three previous years.

Malaria and sandfly fever account for most of the sickness abroad, and influenza at home.

Tuberculosis has been classified by locality, by trade groups and by age groups, but none of these classifications convey much definite information.

The analysis by age of incidence of disease among airmen shows that there are no airmen under 18 serving abroad, and only an average of 79 under 20.

The table of injuries classified by type and cause shows airscrew accidents, 42; athletics, 820; flying, 171; motor transport, 309; starting motor engines (presumably of mechanical transport road vehicles), 51; other causes, 861. The total number of injuries was 2,254, with 100 deaths, 70 of the deaths being due to flying accidents.

The number of deaths in proportion to miles flown is not shown, but the deaths per 1,000 of strength is shown as:—Officers (1924) 14.4, (1923) 11.0, (1922) 11.9, (1921) 8.6; Airmen (1924) 0.8, (1923) 0.5, (1922) 0.6, (1921) 0.5. The increase in the death-rate of airmen is due to the increasing number of airmen-pilots qualifying as pilots and carried as passengers.

In 1924 collisions in the air accounted for 10 deaths. No accidents of this kind were recorded in 1923. The report states definitely that the hours flown per fatal accident were higher in 1924 than in any previous years.

There were two flying accidents not on duty resulting in one death.

Five cases of bullet wounds received in action occurred in 1924, three from Iraq and two from Palestine. All five were wounded by hostile gunfire from the ground whilst engaged on aerial duties.

Athletics accounted for 820 cases, with three deaths, compared with 638 cases and seven deaths in 1923. All three deaths in 1924 were due to bathing, and four of the seven in 1923 were also due to bathing.

The fact that there were only 42 cases of heatstroke, sunstroke, and heat exhaustion, with two deaths, among an average strength of 9,063 (abroad), points to the very high state of discipline in the R.A.F. and the efficiency of the Medical Service.

The work of the Central Medical Board during the year included 698 examinations as to fitness for flying. Of these, 460 were accepted and 238 rejected. The chief reason for rejection was defective vision, which accounted for 121 of the total. These figures include 34 serving officers examined for permanent commissions (one rejected) and 99 Naval Air Arm candidates (24 rejected).

A physical assessment table shows that of the officers of the General Duties Branch, 90 per cent. were fit for full flying duties in 1924, compared with 87 per cent. in 1922 and 1923.

Taking the report as a whole, the R.A.F. Medical Service seems justified in patting itself on the back. It bravely owns up to damp barracks at Gosport, and unsatisfactory hospital accommodation at Sarafand, but no doubt these blots on its character have been wiped out in 1925.—C. M. MCA.

Per Ardua at Twickenham.

The R.A.F. representative Rugger team played its first game on Jan. 6, when it met Guy's Hospital at Honor Oak Park. The R.A.F. team was defeated by a goal and three tries to a try. The pitch was in a bad condition before the game started and the heavy going slowed the game down somewhat.

In the first half Guy's got the best of the scrimmages

BRITISH ADC AIRCRAFT LTD AIRCRAFT

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Designers and Constructors of 27/60 h.p. "CIRRUS" Aero Engines.
120/140 h.p. "AIRDISCO" Aero Engines.

27/60 h.p. A.D.C. "CIRRUS" ENGINE.

The 27/60 h.p. A.D.C. "CIRRUS" Engine was the first British Low Powered Aero Engine to pass the Air Ministry 100 hrs. Type Test, and has been adopted for use in the De Havilland "Moths," with which the Light Aeroplane Clubs are equipped.

The following opinions of "CIRRUS" owners after some months' running should be of interest:

The De Havilland Aircraft Co., Ltd.,
Stag Lane Aerodrome,
Edgware.

21st December, 1925.

Extract.

"I am sure that you have done extremely well in achieving in such a remarkably short time, the production of an engine which to-day is giving literally no trouble at all."

"There is no doubt that the engine is behaving like one with years of development behind it."

London Aeroplane Club,
3, Clifford Street,
London, W.1.

17th December, 1925.

"I enclose a table showing the flying carried out by the London Aeroplane Club from the 19th August to the 30th November on the two D.H. MOTHS fitted with 27/60 h.p. CIRRUS engines."

"From this table you will see that flying was carried out on 72 days and that 729 flights were made resulting in a total flying time of 298 hours 45 minutes."

"We are extremely satisfied with the performance of the two CIRRUS engines supplied by you in the D.H. MOTHS. The only trouble we have experienced with these engines is with the valve seatings, but the modification you made has entirely corrected it."

"I trust that you will find these figures of interest."

Newcastle-upon-Tyne Aero Club Ltd.,
38, Cloth Market,
Newcastle-upon-Tyne.

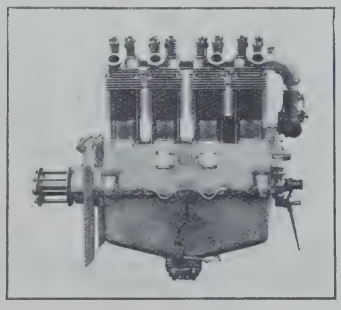
25th November, 1925.

Extract.

"The Cirrus engines fitted to the Machines have proved exceptionally reliable and economical.

The only replacements necessary on the two engines have been two new Cylinder Heads, the Valve Seatings of which were found by the representative of the A.D.C. Aircraft Ltd., when carrying out a modification, to have moved an almost inappreciable amount in the Cylinder Heads. The particular engine in which this very slight defect, which was not noticeable in running, was found had done 49.5 flying hours and 58 hours' total running.

No other replacements whatsoever have been necessary on either engine, although over 100 hrs.' flying has been done."



27/60 h.p. A.D.C. "CIRRUS" ENGINE.

LONDON TO DUBLIN

The recent fine flight by Col. the Master of Sempill (including a 70 miles sea crossing) was carried out with a De Havilland "Moth," fitted with an A.D.C. "Cirrus" Engine.

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and they started some good movements in the three-quarter line. Good Air Force tackling saved the situation, but Guy's managed to scramble over in the corner ten minutes from the start. The place-kick failed.

From this point the Air Force forwards began to show some of their last year's form in the loose, although they were still losing ground in the scrums. The next try followed a scrimmage near the half-way line, from which the ball emerged in an unexpected place and was picked up by Sq. Ldr. Lowe, who cast it to the lions. Sq. Ldr. Russell made a desperate effort to retrieve it, but was felled by a gigantic lion (known to his supporters as "Hutch") and remained with his face in the mud underneath the aforesaid Hutch, while another lion scored an easy try. A goal resulted.

The next incident occurred on the other wing when a free-kick to the Air Force was followed by no less than seven attempts to find touch. Flg. Off. Trower, who played a splendid game on the left wing throughout, gathered the ball from an opening by Flt. Lt. Chick and made a fine straight run down the line and scored near the flag. The place-kick fell short.

In the second half the R.A.F. started shoving their weight and getting the ball, but the three-quarters were slow and Sq. Ldr. Lowe, who appeared to be lame, was practically a passenger. Even then the forwards might have scored if they had used a little more footwork.

Flt. Lt. Chick made a splendid break away, but found himself alone and was brought down. Flg. Off. Chambers at stand-off half was very good indeed. He made at least one splendid individual run which was spoilt by a forward pass on the wing. Sq. Ldr. Russell was rather below his usual form, but he had lost none of his gift for cropping up at critical moments all over the field.

Flg. Off. Wilson, at full back, had a tremendous lot to do, all the more so because of faulty touch-finding, but he is fast and has very fair hands.

The other two Hospital tries came in the last few minutes after a very even and hard fought second half.

The R.A.F. team were :—

Flg. Off. C. B. Wilson, back; Flg. Off. S. H. G. Trower, Sq. Ldr. C. N. Lowe, Flg. Off. R. W. L. Glenn, and Flt. Lt. O. C. Bryson, three-quarter backs; Flg. Off. P. J. Chambers and Sq. Ldr. J. C. Russell, half-backs; Flt. Lt. J. S. Chick, Flt. Lt. T. Rose, Flt. Lt. F. H. Isaac, Sq. Ldr. F. W. Trott, Flt. Lt. W. G. Meggitt, Flg. Off. St. J. F. Wintour, Flg. Off. J. G. Frank, and L-AC. J. F. Hampton, forwards.

C. M. Mc. A.

The R.A.F. in Copenhagen.

A boxing team drawn from the British Army and the Royal Air Force took part in a contest against the Sparta Club of Copenhagen at Copenhagen on Jan. 9 and 10. The results of the contest in which men of the R.A.F. took part were :—

Fly-weights.—Jensen (Sparta) beat AC. Watkins (R.A.F.).

Light-weights.—Jensen (Sparta) beat F-S. Stone (R.A.F.); Sander (Sparta) beat AC. Patterson (R.A.F.

Fly-weights.—Andersen (Sparta Club) beat AC. Watkins on points.

Light-weights.—Sande (Sparta Club) beat F-S. Stone (R.A.F.) on points; Madsen (Sparta) beat AC. Petterson (R.A.F. on points.

AUXILIARY POLICE FOR AIR DEFENCE.

The Morning Post Special Correspondent at Chelmsford in a communication dated Jan. 3, states :—

A comprehensive scheme for the defence of London against aircraft, which has been under consideration for the past two years, is now taking shape.

It applies to the Home Counties generally, but its application in Essex indicates its general features.

Briefly, an auxiliary police force is being raised for the County of Essex, and it is the reserve of this organisation which will carry out manœuvres in the observation of aircraft. At given times the men are to be posted at various points of observation, in order to observe the movements of aeroplanes above them. The corps will transmit its observations to a central base.

The operations are directed by the War Office, but the reserve corps is placed under the Chief Constable of Essex for discipline and training. Aeroplane observations will take place for the first time in July.

It is understood that Major-General Ashmore is in charge of the general scheme, applying to the whole of the Home Counties.

Brigadier-General De Rougemont, of Coombe Lodge, Great Warley, has been appointed Chief Special Constable of the Essex Special Police Force, working in conjunction with Captain J. A. Unett, Chief Constable of Essex. Other appointments to the force are those of Brigadier-General Champion de Crespigny, of Champion Lodge, Heybridge, as Assistant Chief Special Constable for the east of the county, and Mr. Edward Magor, of Rutton, Brentwood, for the west of the county.

It is hoped to organise a force of 500 men, who will be an adjunct of the usual police organisation. They will have the same uniform as the regular police, except that they will wear caps instead of helmets.

THE SHENANDOAH INQUIRY.

The Naval Court appointed to inquire into the causes of the disaster to the airship *Shenandoah* has found that it is "part of the price which must be paid in the development of a new and hazardous art."

The *personnel* of the airship are exculpated from all blame and Capt. Lansdowne is declared to have been justified in starting his flight at the time when he did. He is also stated to have shown skill, courage, and fine qualities of leadership when the vessel broke up.

It is further pointed out that, although the gas pressure due to the airship's altitude and to the rapidity of her rise, might have become high enough to cause some damage to her structure, the Court is unable to state this definitely. The pressure would not have endangered the ship in normal conditions Her final destruction, the finding adds, was "due primarily to large and unbalanced external aerodynamic forces arising from high velocity air currents."

The Court also characterised as inadvisable the reduction from 18 to 8 of the number of automatic valves for the release of the helium gas.

THE MONSTROUS MONGOL.

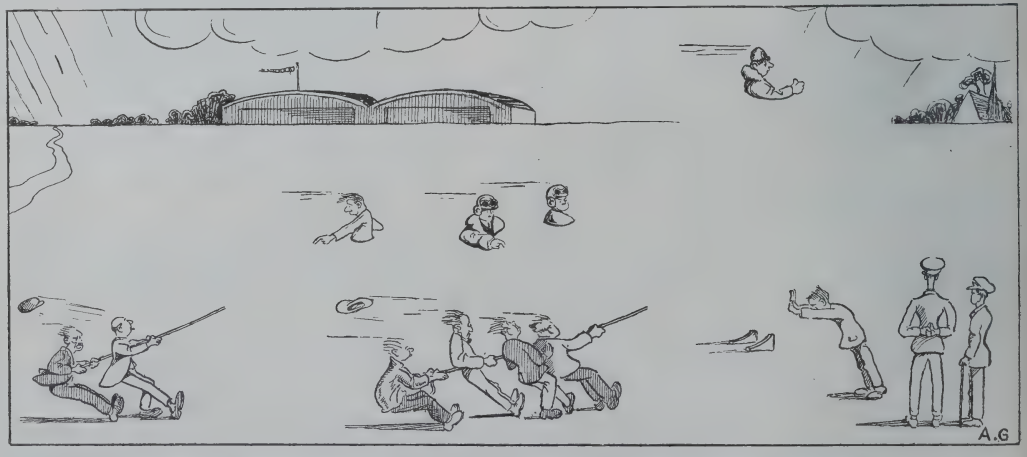
The Times of Mesopotamia, of Nov. 29, states :—

According to the *Pioneer* the presence in Afghanistan of an increasing number of Russian aeroplanes invests with special importance the problem of the adequacy of the air defences of India.

Six squadrons, states the newspaper, appear to be an insufficient force for the protection of the whole of the North-West frontier, and, we believe, moreover, that at the present time there is not a single anti-aircraft gun in India.

But important though anti-aircraft guns may be, the question of an adequate Air Force is of far greater moment. It would be interesting in this connection to know whether the Russian aeroplanes have a higher speed capacity than the machines in possession of the Royal Air Force in India.

If by any chance an air raid on India materialised, there would probably be a frenzied rush to send out an unlimited number of machines from England, but were the necessary precautions taken now the possible danger of air attack from the North-West would effectively be averted.



HUSH!!.—An attempt by a correspondent to depict the scene at Farnborough when a machine which is still on the Air Ministry's Secret List is having its engine run up prior to its first secret test flight.

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THE ECONOMICS OF AIR TRANSPORT.—II.

By W. H. Sayers.

Unfortunately very little data as to air transport costs are available to those outside of the Air Line organisations which now exist. Considering that the major proportion of the whole of the operating costs of these organisations has been provided out of the public purse, it seems not unreasonable to demand that fairly complete details of costs and so forth should be available for public purposes, and should not be permitted to remain the private monopoly of the Air Line Companies and a few Air Ministry officials. At the same time the lack of such data is not an insuperable bar to the formulation of a few general principles which must pretty certainly apply. In addition a few odd details bearing upon costs and traffic conditions have become public property, and from these some useful information may be gleaned. It is therefore thought that an attempt to discuss the question of Air Line costs as a whole and as distinct from aeroplane costs may be of some value at the present time.

Capital Expenditure.

What costs have to be met in order to operate an air line? In the first place the material equipment necessary has to be acquired and capital must be expended thereon. A fleet of machines complete with engines and a proportion of spares must be purchased. It may be necessary to purchase land for aerodromes and to erect sheds and workshops and offices thereon. Plant and tools for repair shops must be acquired, offices must be obtained and furnished. Expenditures of this nature are in a category by themselves. They are non-recurrent and are charged to capital account. Now the capital thus expended may either have been borrowed under a definite obligation to pay a certain rate of interest thereon, or may have been obtained as ordinary share capital in the hope of earning a dividend but under no obligation to pay a definite rate of interest.

If there is an obligation to pay interest, the amount so payable annually is obviously a cost chargeable to the undertaking. If there is no such obligation it is legitimate to regard a reasonable rate of interest as a cost, and to regard failure to earn that interest as evidence of loss. Alternatively one may charge nothing on this account and regard any surplus that can eventually be distributed in dividends as a profit.

Some part of the capital expenditure suggested may be avoided, as by renting aerodrome and office accommodation instead of purchasing. Rent, however, is interest on capital expended by the owner of the rented property, and such rental costs, together with interest charges on the firm's own capital are fixed by the equipment employed and not by the use made of it. In other words the magnitude of these costs is determined by the volume of business which the promoters expect and not by that which is actually achieved.

The Cost of a Staff.

In addition to material equipment a staff will be necessary. Quite independently of the amount of flying or other operations which may be carried out, a certain minimum staff, and therefore a minimum annual salary and wage bill, will be necessary. Even if the material equipment is never used a certain amount of cleaning and maintenance is necessary, and a responsible managerial staff is required to supervise such work. Over and above this minimum further wages and salaries costs will be increased which will depend on the amount of flying actually accomplished. Thus the cost of staff is partly determined—like interest and rent charges—by the nature and extent of the initial equipment, and partly by the amount of flying actually carried out.

Depreciation and Damage.

Despite the most careful maintenance, the equipment of the concern will depreciate in value with time. Even apart from use this is the case. An aeroplane, an engine, or even an office chair will be worth less in five years' time than they are to-day—even if in the interval they have been kept in storage under the best possible conditions. If the equipment is used, depreciation may be more rapid in proportion to the extent of use. Thus depreciation costs also may be considered as in part fixed by the nature of the equipment itself and in part dependent on the use made of it.

The whole of the firm's stock in trade is liable to damage or destruction by accidental causes. Apart altogether from the risks of flying there are the risks of fire, storm, civil commotion, and the like, which are incurred under any conditions. The air line may bear all these risks itself, but is more likely to insure them. It is clear, however, that the cost of insurance is also partly fixed, and only in part determined by the amount of flying.

Running Costs.

Then come those costs which are usually regarded as running costs—that is costs which are the direct result of flying. These include fuel and oil costs, flying pay of machine crews, costs of repair and maintenance necessitated by wear and tear in service, etc., etc. It is often supposed that these costs can be treated as being in direct proportion to the actual service given by the line. But in practice they do not vary quite in this way.

Fuel and oil may be regarded as being consumed at a certain average rate per mile flown. This however will never account for the whole expenditure on these items.

A certain quantity of fuel and oil will be lost by leakage and evaporation. Some will be consumed in engine tests, in warming up for flight, etc. The amount so used or lost will not be proportional to miles flown in service, for some fuel and oil will be consumed by, and lost from, a machine and engine never flown but kept in constant readiness for flight.

The cost of flying pay of pilots, etc., is not strictly proportional to miles flown. In the usual case of payment by retaining fee plus a rate per flying hour or mile, the flying pay is so proportional. If the number of retained pilots is fixed, the total retaining costs are entirely independent of the total amount of flying, but if, as is more probable, the number of pilots retained is increased as traffic increases, even the retaining fee costs will change with the amount of flying. But as it is impossible to employ a fraction of a pilot, the number of retaining fees cannot be exactly proportional to flying done, and therefore the cost of pilots is another item partly proportional to flying and partly independent of flying.

Repairs and maintenance necessitated by normal wear and tear in service are obviously increased in proportion to the amount of flying. It cannot be said that they are necessarily directly proportional thereto, and in practice it is impossible to distinguish accurately between the results of fair wear and tear, and other causes of damage of a more or less accidental nature.

The Categories of Cost.

Thus it will be seen that practically all the costs incurred in the running of an air line can be divided into categories. Of these interest or other charges on capital, together with rents (in which may be included such costs as rates and taxes on property occupied or owned) are entirely independent of the amount of flying carried out.

There is no great difficulty in analysing the total costs a little further. Over and above interest, rent and rates and taxes, a certain number of fixed annual charges can be determined which do not depend on flying at all. These would include all insurance premiums against non-flying risks on the concern's property and premises, salaries and wages of the minimum staff needed for maintenance, depreciation costs which would occur whether flying took place or not, and a number of other items of a similar nature.

Further a series of items obviously directly proportional to flying can be determined. Knowing the fuel and oil consumption of machines at cruising speed under standard conditions, a minimum fuel and oil cost per mile flown can be deduced. Fuel and oil costs will actually be greater than this—both for reasons above mentioned and because accidental derangements of carburettors and engines, variable weather conditions, and so forth, will increase the average consumption in service.

The costs of regular overhauls—i.e., overhauls undertaken at the end of definite periods of flying time—routine inspections, and so on, are directly proportional to flying. Repairs which are necessitated by accidental damage, faulty materials or workmanship, and so on, are not necessarily so propor-

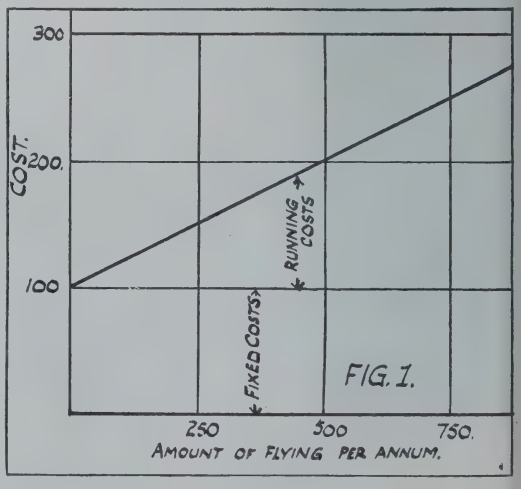
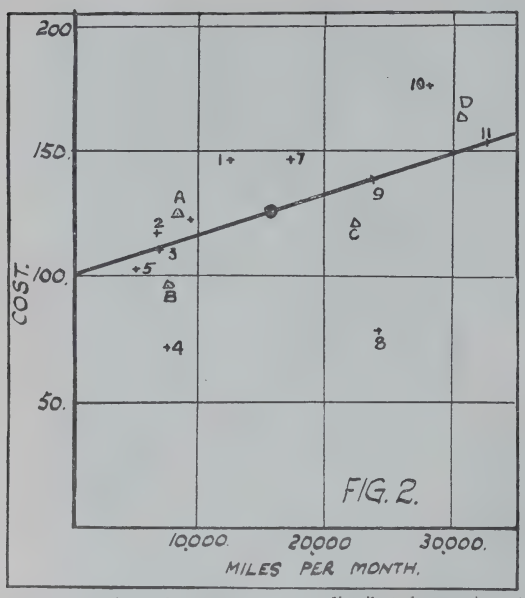


FIG. 1.



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tional. Accidental occurrences are distributed according to the laws of chance. Some types of accident will be increased in probability by flying—others will not.

Thus it can be said that the cost of running an air line will be composed of three categories of expenses, (1) Certain fixed annual charges quite independent of the amount of flying, (2) a definite extra cost for each mile (or ton mile) flown, and (3) a series of items which are partly dependent upon, and partly independent of, the amount of flying.

The Curve of Cost.

The costs of categories (1) and (2) can be represented graphically by a curve such as that of Fig. 1. Here the fixed costs of category (1) are taken as 100 in some unit of cost, and the costs of category (2) are taken at the rate of 100 units of cost for 500 units of flying. (These flying units may be machine hours, machine miles, or ton miles flown—the latter being generally preferable for practical purposes.)

It is by no means obvious how the third category of costs can be represented on the curve. But these costs are generally speaking of an accidental nature. The probability of some of the accidental causes of extra cost is independent of flying—that is, they are as great in one month as in another. The probability of others is dependent on flying—that is, they are as great in one hour's flying as in the next. And although such accidental extra costs may occur in batches during one period and become rare in another if sufficiently long periods are taken, accidental costs not influenced by flying will tend to assume a steady average per annum, and those influenced by flying a steady average per hour or mile of flying.

In other words, accidental costs can fairly be represented by an increase in the fixed part of the costs of category (1) and a further increase in the costs proportional to miles flown of category (2). That is, the addition of these costs will not change the form of the curve of Fig. 1, but will only change the amount of the fixed costs per annum and the rate of the extra cost of flying per mile, hour, or ton-mile.

This conclusion rests on assumptions which are obviously susceptible of considerable argument. Whether they are well founded or not can be determined only by plotting the actual costs of a number of air service undertakings against the mileage over fairly long periods, and discovering whether, in fact, the resulting curves do approximate to straight lines. The necessary data for such a check does not exist. One somewhat inconclusive set of figures is available, and, as will be seen later, these do tend to confirm the applicability of a cost curve of the form shown in Fig. 1.

The Costs of Similar Industries.

The probability that the costs of an efficiently-managed air line will follow a straight-line law can ,however, be confirmed by reference to the known applicability of such a law to certain other cases.

Mr. Willans long ago pointed out that if the steam consumption of a given steam engine in lbs. per hour were plotted against output in h.p. hours, the result was a straight line. Sir Chas. Parson has since shown that the coal consumption of a given battery of boilers plotted against the steam output, followed a similar straight line. It follows that the coal and water costs of a given boiler and engine unit plotted against output gives a straight line.

A very large experience of electric power stations shows that if the total costs per week or per month of such a station are plotted against the station's output of electrical energy for the same periods, a straight-line law is found to apply with very considerable accuracy.

The analogy between the power station and the air line is much more complete than at first sight may be imagined. Total costs in both cases are made up of a large number of items of a very similar nature.

Capital charges, rents, rates and taxes, minimum wages of maintenance staff, insurance against ordinary risks on fixed property, and so forth, are fixed in both cases by the equipment installed and are not affected by the use made thereof.

Fuel and oil costs, repairs, maintenance, wages of operating staff, are for both cases largely, but not entirely, dependent on the amount of use made of the equipment, but are liable to increase by a number of unavoidable, but to some extent accidental, causes.

No arguments of a more convincing nature than those applicable to the air line can be produced in the case of the power station, but in fact the law does apply to the power station with such accuracy that marked deviation from the average line in a particular period is accepted as evidence of some abnormality of operation during that period.

The only air-line cost data so far discovered that will permit the plotting of costs against flying are some given by Mr. Cowley in a recent paper before the Royal Aeronautical Society. These relate to a fleet of four aeroplanes during a period of eleven months, and are in the form of a table to illustrate the effect of seasonal variation of traffic on costs.

The cost per passenger mile for each month is given as a percentage of the average cost per passenger mile over the whole eleven months. As passenger miles per month are also given, the total cost per month—in units of unknown value—are obtained by multiplying these two figures together. If the total costs in each month are plotted against miles flown in that month a cost curve of the type required will be obtained. The significant figures are as follows :—

Month.	1 Miles Flown for Month.	2 Passenger Miles for Month.	3 Cost per Pass. Mile for Month.	4 Total Cost for Month.	5 Average Cost per Month.	6 Average Miles per Month.
Oct.	12,190	107,000	138	147.6	125.6	8,357
Nov.	6,440	42,200	276	116.0		
Dec.	6,440	39,200	288	113.2		
Jan.	7,360	26,500	267	71	98.3	7,206
Feb.	5,060	30,500	334	102		
March	9,200	69,400	176	122		
April	17.710	150,000	98	147	122.1	22,066
May	24,610	123,000	63.3	78		
June	23,690	176,000	80.5	141.5		
July	27,830	269,000	66.1	177	165	30,360
Aug.	32,890	332,000	46.0	153		

Columns 1, 2 and 3 are taken directly from Mr. Cowley's table. Column 4 is the result of multiplying columns 2 and 3 together and dividing by 100,000. The costs of column 4 plotted against the mileage of column 1 are shown on Fig. 2 by the points numbered 1 to 11. These points do not lie on any line or curve, but their scattered nature is not surprising. In the original table the costs are dissected under the heads of Salaries and Wages, Depreciation, Insurance, Overhauls, etc. For one month (May), insurance costs are negative—the insurance firm having refunded a sum as a rebate on premiums as the result of their having been no claims. In another month (July) insurance is given as 266 per cent. of the average, which was due to the maximum premium being charged owing to a claim having been made. The overhaul costs given vary from month to month in a manner apparently entirely independent of each month's flying—indicating that overhauls necessitated by flying in one month have been charged to the following months or the like. These irregularities are obviously of the type which it is permissible to average out over considerable periods.

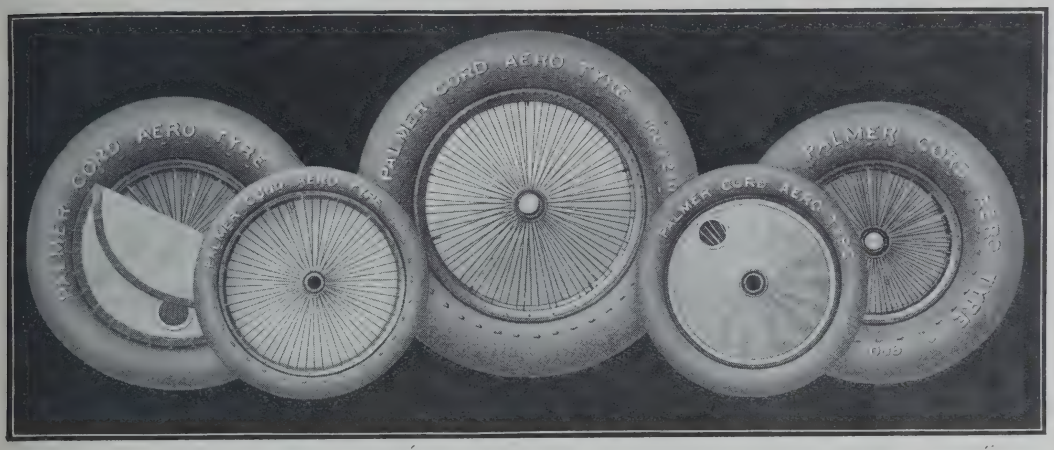
To obtain a fairer view the figures have been averaged over three periods of three and one of two months (columns 5 and 6) and these four sets of figures have been plotted as A, B, C and D, on Fig. 2. A straight line can be drawn which lies evenly between these points, which also passes through the average point (marked with a circle) for the whole eleven months. It is suggested that this line fairly accurately represents the rate of variation of cost with miles flown for this case.

THE CANADIAN TECHNICAL COMMITTEE.

With reference to the note which appeared in The Aeroplane of Dec. 9, 1925, recording the formation of the Technical Advisory Committee on Aeronautics, the list of members should have included the name of Mr. W. T. Reid, the chief aeronautical engineer of Canadian Vickers Ltd., who represents the Aircraft Industry.

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		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	179	178.	55.	132/46	1000×180	148	220.	80.	Central
											149	185.	55.	Central
300×60	16	111.12	25.4	Central	650×125	119	178.	55.	132/46	,,	155	220.	66.67	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	166	185.	55.	125/60
,,	172	130.	38.09	Central	,,	188	120.	34.92	Central					
575×60	21	160.	28.	Central	750×125	77	178.	44.45	132/46	900×200	107	185.	55.	Central
,,	186	120.	34.92	Central	,,	92	185.	55.	135/50	,,	108	185.	55.	125/60
,,	190	150.	38.09	Central	,,	95	185.	55.	Central	,,	128	220.	66.67	Central
650×65	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	,,	137	250.	80.	Central
,,	79	178.	44.45	Central	,,	112	150.	38.09	Central	,,	157	185.	80.	Central
,,	100	178.	38.09	132/46	,,	176	178.	44.45	Central	,,	202	185.	60.32	Central
,,	101	178.	31.75	132/46	,,	179	178.	55.	132/46					
										1100×220	134	220.	66.67	Central
600×75	21	160.	28.	Central	800×150	161*	185.	55.	135/50	,,	136	250.	80.	Central
,,	186	120.	34.92	Central	,,	162*	185.	55.	Central					
,,	190	150.	38.09	Central	,,	163*	185.	66.67	135/50	975×225	192	185.	60.32	Central
700×75	78	178.	44.45	132/46	,,	169†	185.	55.	135/50					
,,	79	178.	44.45	Central	,,	177	185.	55.	135/50					
,,	100	178.	38 09	132 46	,,	183	185.	55.	Central	1250×250	133	250.	80.	Central
,,	101	178.	31.75	132/46	,,	211*	185.	60.32	135/50	,,	154	304.8	101.6	Central
700×100	77	178.	44.45	132/46	1000×150	167	185.	55.	125/60					
,,	92	185.	55.	135/50	,,	174	250.	80.	Central	1500×300	115	304.8	101.6	Central
,,	95	185.	55.	Central	,,	182	185.	55.	Central	,,	126	304.8	152.4	Central
,,	99	178.	38.89	132 46	,,	187	220.	66.67	Central					
,,	112	150.	38 09	Central	,,	201	185.	60.32	125 60	1750×300	139	400.	152.4	Central
,,	176	178.	44.45	Central	,,	210	185.	60.32	Central	,,	191	350.	150.3	Central

*Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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UIND (343)

THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

The following members received flying instruction during the week :—Mrs. Eliott-Lynn, C. E. Murrell, R. C. Presland, R. V. Banks, Major Beaumont, G. N. Howe, D. P. H. Esler, S. O. Bradshaw, T. C. Angus, N. Jones, O. J. Tapper, R. C. Brighton, G. W. Quirk, R. L. Preston, S. C. Richards, R. P. Cooper, E. S. Brough, R. Thomas, A. P. Hunt, A. R. Ogston, I. J. C. Mitchell.

The following members flew solo :—Mrs. Eliott-Lynn, Major Beaumont, Col. Turner, G. H. Craig.

The total flying for the week was 17 hrs. 40 mins.

On Friday, the 8th inst., Col. Turner in carrying out his tests for his aviator's certificate damaged G-EBLU. The figures of eight and landings had been carried out satisfactorily and the altitude test of 6,000 feet was completed and he was alighting with engine cut off. He made a gentle side slip to lose height on approaching the aerodrome and the lower wing and undercarriage fouled a high part of the aerodrome hedge. The machine swung round immediately into the ground and was considerably damaged. The extent of the damage to G-EBLU has not yet been definitely ascertained, but in any event it will mean carrying on with one machine for the next few weeks.

Immediately afterwards Major K. M. Beaumont, D.S.O., took out the other Moth, G-EBLI, and carried out his tests for the aviator's certificate in a satisfactory manner.

Capt. F. G. M. Sparks is taking his Instructor's Course at Upavon beginning on Monday, January 11, and will be away from Stag Lane for the next fortnight.

The Lancashire Aero Club.

Flying has been possible on only Saturday and Sunday. Mr. Cantrill gave "dual" instruction to S. Parker (20 mins.), T. Wilkinson (20 mins.), H. Hardy (20 mins.), J. Leeming (20 mins.), and P. Michelson (25 mins.). Mr Scholes instructed M. Lacayo (35 mins.), H. Stern (30 mins.), W. Colley (25 mins.), P. Tummers (25 mins.), T. Wilkinson (20 mins.), and S Crabtree (20 mins.).

Total time flown : 45 hrs. 55 mins.

"Joy Rides" are given to members only on the last Saturday of each month. The rest of the time machines are kept exclusively for dual instruction and pupils' solos. Flying members are asked to note that there are now vacancies on the Instructors' Lists and those wishing to begin should attend at the aerodrome to make arrangements. All flying members are eligible for instruction.

The Club's Avro, presented by Col. M. O. Darby, is being reconditioned and, it is hoped, will be flying shortly. Early delivery has been promised of the Avro given by Sir Wm. Letts and also the Moth presented by Sir Charles Wakefield.

The solo pilots may stop worrying about any shortage of machines in the Spring. They forecast gloomily visions of hordes of members swarming down on the aerodrome when the Spring arrives and of themselves fighting a desperate battle to retain a machine from the grasp of these rapacious pupils. We wish to point out to them that there will be three Moths and two Avros in use, so that they will have a chance of a flight.

Should there prove a shortage of machines, the Club's tame "Gift Enticer" may be relied upon to discover further generously-minded citizens.

[One would remind the Club that the Committee still have to acquire the machines promised by Colonel Groves on behalf of the Brewers of Manchester and by Mr. Norris of Cockshoots' on behalf of the Motor Trade of Manchester, with the assistance of Mr. Parnall. They will make a couple more aeromobiles—when they are delivered—without straining the abilities of the "Gift Enticer."—C. G. G.]

The Newcastle-upon-Tyne Aero Club.

Report for week ending Sunday, Jan. 10 :—Flying Times—"LX" 18 hrs. 36 mins., "LY" 5 hrs. 11 mins. Total—23 hrs. 47 mins.

The following members had dual instruction under Major Packman :—Mr. H. H. Leech (32 mins.), Mr. J. M. Davidson (3 hrs. 52 mins.), Mr A. E. George (30 mins.), Mr. J. A. Somerville (2 hrs. 20 mins.), Mr G. H. Twine (30 mins.), Mr. L. Smith (30 mins.), Mr. A. D. Bruce (15 mins.), Mr. C Thompson (25 mins.).

Secondary Dual Instruction :—Mr. Leech (1 hr. 35 mins.), Mr. W. T. Walton (1 hr. 22 mins.), Mr. Stobie (10 mins.), Mr. J. D. Irving (45 mins.), Mr. R. N. Thompson (35 mins.)

Solo :—Mr. Leech (10 mins., first solo), Mr. Walton (2 hrs. 10 mins.), Mr. J. D. Irving (1 hr. 50 mins.). Mr. R. N Thompson (2 hrs. 53 mins., including tests for Pilot's Certificate).

Flights by "A" Pilots :—Mr. Stobie (50 mins., 2 flights), Mr. Baxter Ellis (with Mr. A. M. Sutherland as passenger, 48 mins.), Mr. N. S. Todd (15 mins.), Mr. Forsyth Heppell (30 mins., with Mr. Young as passenger, 20 min. with Mrs. Heppell, and 10 mins. with Miss Coppett).

Tests by Major Packman, 15 mins.

Passenger flights with Major Packman :— Miss Zollner, Miss Noble and Lieut. Bridges, each 5 mins.

The weather mixture this week has consisted of fairly equal parts of fog, rain and high winds, but a lot of very useful flying has been carried out, though Thursday was a blank day.

Tuesday was an important day in the history of the Club, it being the first occasion on which two members have been launched solo on the same day, Mr. J. D Irving and Mr. H. H. Leech each making their first flights alone, and both doing very good performances.

Mr. R. N. Thompson carried out the first part of his tests for his Pilot's Certificate, making his figures of eight in grand style.

Wednesday was also an historical day, as this was the first time a member had dared to shed an undercarriage. The honour goes to Mr. Irving, who, after making his third solo of 45 mins. in excellent style, misjudged his landing with the usual result. Mr. Irving has taken matters very seriously throughout, having been in no hurry to fly alone and has put in a lot of dual flying, including dozens of landings almost faultlessly, and it is just a piece of bad luck. Mr. Irving was back at it on Saturday and in the course of a flight with Major Packman made very good landings every time.

The Club is now reduced to one Moth, the hardy "LX" (and the Gull, which, like all good aeroplanes, is held up until the engine, which is being overhauled, arrives), but there has been a good attendance of members and since the accident nearly 15 of the 23 hrs. of the week have been flown.

Mr. Thompson carried out the second part of his tests in good style (He has, for a long time, known the "Questions and Answers" so well that other members have been making it a habit to be examined by Mr. Thompson during quiet times.) The reason he was unable to complete all his tests on Tuesday was that while he was doing his figures of eight the visibility became so bad that it was impossible for him to see one turning point from the other, and just in case the observer might have any doubt that he had correctly turned one point at any time, he proceeded after completing five to "do a few more," finally completing 10 figure eights. Wednesday being much better he carried out his height test and on landing began to inquire who had been moving the balloon shed, which is near the aerodrome and is an excellent land mark, as he so frequently lost sight of it that he was sure that someone had been moving it about to mislead him.

Mr. MacKay, Mr. Walton and Mr. Leech now only await suitable weather to complete their tests, so "LY" should be kept very busy when she returns from the hospital. The four "A" Pilots of the Club have all flown during the past week.

The publicity given to the "hush" machine a few weeks ago has resulted in it being impossible to obtain any news of it whatever, though it is known that the drawings have not left the town yet. Possibly it is intended for the 1926 Competitions, or else it must be very "hot," or, again, as it is known that some wonderful ideas have at times been submitted to the designer, though it was concluded that it was to be a light aeroplane, it may have developed into a bomber, which would account for the profound silence.

The following are extracts from the Club's Monthly Circular for December :—

"Mr. P. Forsyth Heppell and Mr. N. S. Todd completed their tests for 'A' Licences, bringing the number of Licensed Pilots in the Club to four. Four more are well advanced and will qualify on the first occasion that the weather is suitable for their height tests.

"The total number of flights made during the month was 136, and the total flying time was 67 hrs. 20 mins. Twenty-three Pilot members flew under instruction.

"The total number of flights made on the machines (that is since September 15, when the first machine was delivered) is 491, and flying time 206 hrs. 11 mins.

"The Whist Drive held at the Club House on the 16th was very successful, and there are already indications that the next, which takes place on Jan. 13, will be very well attended. The third Whist Drive will take place on Feb. 3.

"A large number of members and friends attended the informal Dance at the Club House on New Year's Eve and spent a very happy time, seeing the New Year in "on the spot."

"The pilots of four Fairey 3D aeroplanes landed for petrol at the aerodrome on Dec. 11. Letters thanking the Club for the assistance rendered to them on the occasion have been received from the officers concerned and the Commanding Officer of the R.A.F. Training Base. Copies of these letters are posted in the Club House and Hangar.

"The Air Ministry has issued a Civil Licence in respect of the Aerodrome, which will now be a public landing ground and may be used by any type of machine.

"To attain success this year, it will be necessary to have a considerably larger membership than at present, and it will be to the advantage of all concerned if members will use every endeavour to enrol new members. There are still 11 vacancies for founder members.

"(Signed) A. H. Bell, Secretary."

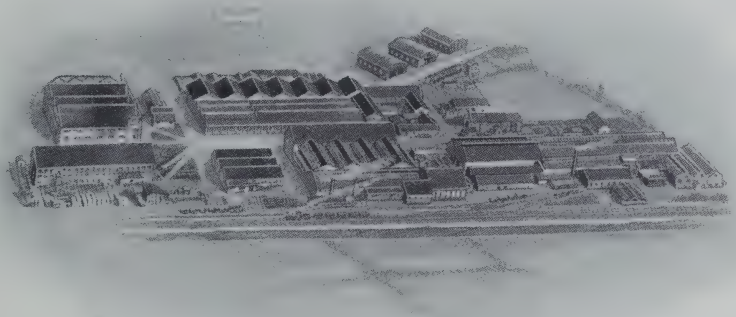


WITH THE LANCASHIRE CLUB.—Left to right, Mr. Bartrum (Ground Engineer), Mr. Scholes (Instructor), and Mr. Mark Lacayo (Pilot-Member). The machine is a De Havilland Moth (G-EBLV) with A.D.C. Cirrus engine.

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View of the Westland Works photographed from a Westland Aeroplane.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 9; Tuesday, 10; Wednesday, 6; Thursday, 6; Friday, 11; Saturday, 11; Sunday, 0.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam:—Berlin: Machines 30, passengers 76, freight 10 tons.

AIR UNION:
Paris—London: Machines 12, passengers 35, freight 9½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 11, passengers 9, freight 1 ton.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES: Nil.

Total number of trips by British Machines: 30, carrying 76 passengers. Foreign Machines: 23, carrying 44 passengers.

Comparative Figures:

Week ending Jan. 10:
Machines, 53; Passengers, 120; Crews, 65; Total personnel, 185.

Corresponding week, 1925:
Machines, 63; Passengers, 70; Crews, 79; Total personnel, 149.

Corresponding week, 1924:
Machines, 38; Passengers, 51; Crews, 58; Total personnel, 109.

Corresponding week, 1923:
Machines, 34; Passengers, 63; Crews, 65; Total personnel, 128.

Corresponding week, 1922:
Machines, 31; Passengers, 51; Crews, 50; Total personnel, 101.

Corresponding week, 1921:
Machines, 27; Passengers, 30; Crews, 32; Total personnel, 62.

Croydon Notes.

So far there appears to be little sign of growth in the new buildings on the Brighton Road side of the aerodrome, and presumably they will not be completed until the Summer of 1927, at the very earliest. Meanwhile this year there will be either appalling overcrowding in the hangars, or inadequate accommodation of a temporary nature.

The Bristol Bloodhound has now arrived. In it is installed the new and highly secret Bristol Jupiter Mk. VI (Sorry, Air Ministry Secrecy Department, but I had to, and it only meant adding I to V, which the more advanced foreign Air Attachés are able to do.)

The Jupiter VI is being tried out to find its worth as a commercial engine. Its horse power is much higher for its weight than that of other radials in the same category, and its reliability is said to be extraordinary. Lack of vibration and lack of noise are also marked.

Last week between the 4th and the 9th, the Jupiter VI, accompanied by Mr. F. L. Barnard and the Bloodhound, made 11 trips between Croydon and Bristol under official observation. This series of tests will be continued and the statistics of the engine will be watched closely. This searching test is likely to inspire much more confidence in the engine than installing it untried, and great credit is due to the Bristol Aeroplane Co. Ltd. for thus demonstrating their confidence in their engine. Over and over again it has been found that engines which do remarkable performances when anchored to a solid steel test-bed, play queer tricks when in a dithering aeroplane in the air. So the air test is also the acid test.

One gathers that there is some doubt as to whether the proposed night experimental air service between London and Paris will take place. It seems that the management of Imperial Airways Ltd. agree with the remarks made in this paper that this is the wrong time of year to try *experimental* night services.

Still it is up to the Air Ministry. If the department of Civil Aviation likes to spend money on foolish and immature things, it must stand to be shot at.

Mr. Sammy Hall, late of the late Hall and Brenard Ltd., has formed another company, with Mr. Lewis, his late Chief of Stores. He calls it the Lewall Trading Co., and they are following up some of the business of the old company.—G. D.

Air Mails in 1925.

The Postmaster-General communicates the following particulars of outgoing British Air Mail traffic during 1925:—

There has been an increase in the total weight of letter mail during the year, and the total weight despatched by air has now risen to 15,520 lbs. The increase has been most marked in the mails to Paris and to Morocco and Algeria, which have increased by 19 per cent. and 33 per cent. respectively. By the latter service 2,500 lbs. of letters were despatched during the year.

One of the heaviest of the letter mails is that for unoccupied Germany (Hanover, Berlin and Hamburg). This increased by over 10 per cent. The mails for Belgium, and for Denmark, Norway and Sweden, also showed increase.

Considerable use was made of the air services established in Continental countries to supplement the service afforded by Imperial Airways where necessary. New letter Air Mails were instituted to the East Baltic Countries and Russia, the latter of these attracting as much as 680 lb. of letters in the four months of 1925, during which it was in operation. This service has occasionally been used in the inward direction for mails from the East brought by the Trans-Siberian Railway. The course of post from Shanghai to London has thus been reduced to about 15 days.

Facilities for using the New York-San Francisco Air Mail Service were also made available in May last; but hitherto little use has been made of the service.

The Cairo-Baghdad service has worked with marked regularity. It continues to carry a considerable volume of mails in spite of the competition of the trans-desert motor service between Haifa and Baghdad.

The Air Parcel service continues to carry a substantially greater volume of mails than the latter service. The total weight of the Parcel Air Mails on the whole of the Continental services in operation was 50,000 lbs. apportioned among the several services as follows:—Paris, express 13,600 lbs., non-express 10,200 lbs.; Holland, 13,200 lbs.; Germany, including the Rhine Army, 13,000 lbs.

The De Havilland Aircraft Co., Ltd.

At the Annual Meeting of the de Havilland Aircraft Co. Ltd. on Dec. 22, 1925, the Chairman, Mr. A. S. Butler, was able to announce that the very satisfactory results hitherto attained by the firm had been well maintained in the year under review, and to submit to the meeting a resolution for the payment of dividend at the rate of 10 per cent. which was unanimously adopted.

In particular reference to the work of the year under review, Mr. Butler referred to the introduction of the Moth (D.H.60) and the very remarkable success attained by that machine. Another event which they could regard with pride was the successful flight of one of their D.H.50s, carrying Sir Sefton Brancker and piloted by Mr. Cobham, to India and back. Mr. Butler also referred to the firm's policy in paying particular attention to the design of machines for civil purposes and thus securing customers other than the Air Ministry. This policy had proved very successful, and he believed that to-day de Havillands held the premier position in Britain—if not in the world—as designers and constructors of commercial aircraft.

THE R.Ae.C.'s THIRD MONTHLY HOUSE DINNER.

The Third Monthly House Dinner of the Royal Aero Club will be held at the Club on Jan. 20, at 7.30 p.m.

The subject for discussion will be "The Auxiliary Air Force" and the debate will be opened by the Chairman, Lord Edward Grosvenor.

Members wishing to attend are requested to send in their names at once to the Secretary as the number is limited to 60. Dinner 5s. Morning Dress.

The subject for the February Dinner will be "Private Flying." The date will be announced later.

"THE STRATEGY AND TACTICS OF AIR FIGHTING."

Sir,—Major Stewart has apparently read my criticism of his book with the same degree of care as that which he has bestowed on the study of the art of war. He says,—

In general I am content that your readers should judge for themselves the potency of Berkeley's ginger-pop. I need ask your permission to recall only one question which Berkeley puts and which alone indicates the level of his aeronautical understanding.

"What is there," he demands, speaking of air defence, "to prevent the enemy machines flying at a height equal or in excess of [*sic*] that of the defender?"

If, after taking thought and remembering that the enemy machines are heavy, fully-loaded bombers, while the defending machines are high-performance, single-seater fighters, Berkeley really finds himself unable to hit upon the answer to his question, and if he still desires to know the answer, I recommend that he should go upstairs and ask his governess.

But he has apparently missed altogether the sentence fol

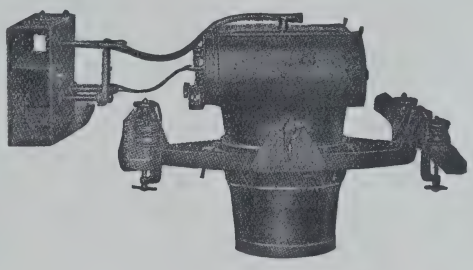
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lowing that which he quotes. The quotation should read :—

What is there to prevent the enemy machines flying at a height equal or in excess of that of the defender? Even though bombers might of necessity be lower, their protective escorts would naturally choose under such defence conditions to fly high.

I have no governess, which possibly may excuse my omission of a preposition in the sentence he quoted. Possibly also the omission may have been due to the printer, a much blamed but blameless man. "BERKELEY."

[One published Major Stewart's letter without comment so that he might have the fair play which he demanded. His own idea of fair play may perhaps be estimated by his endeavour to defeat a critic by using a mangled quotation as a weapon of offence. Major Stewart's babu story, with the phrase "engines inscrutably intermingled," is good. One suggests therefore that he would do better to devote himself to pure fiction in future rather than to distorted facts, whether the distortion be due to intention or to lack of comprehension.—C. G. G.]

FRENCH COMMERCIAL AVIATION.

M. Laurent Eynac, the Under-Secretary of State for Aviation, in presenting the Budget of his Department in the French Chamber, explained that the Paris-London service of the Air Union had for the first nine months of 1925 shown an increase of earnings relative to expenditure of from 17 per cent. to 69 per cent., as compared with 1924. The amount of subsidy aid to all air lines during the past year was 61,350,000 francs (about £470,000).

In regard to the protest of Germany against the "Nine Rules" he said that conversations were still in progress and that they were taking a favourable course, and promised to result in a Franco-German air agreement which might come into force within a few weeks.

ACCESSORIES TO THE FACT.

With reference to the recent successful type tests of the 1,500 c.c. Blackburne Thrush engine which gave 38 h.p. at 2,800 r.p.m., it is interesting to know that the engine was fitted with a B.T.H. magneto with impulse starter, and that K.L.G. plugs of the No. 214 type were used. The engine was run through the type-tests on Shell Spirit.

TITANINE AGAIN.

The new Beardmore XXVI two-seater fighter (Rolls-Royce Eagle IX), designed by Mr. Shackleton for the Latvian Army, is doped with Titanine, which has given every satisfaction to all concerned.

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CRANKLESS (EUROPEAN PATENTS) PROPRIETARY, LTD.—Particulars filed on Dec. 7 pursuant to Section 274 of the Companies (Consolidation) Act. The Capital is £150,000 in £1 shares. The Company was incorporated in the State of Victoria on May 5, 1925, to carry on the business of mechanical engineers, machinists, manufacturers of all kinds of machinery, locomotives and engines, founders, boiler makers, wire-drawers, marine, textile, mining, aeronautical and aviation engineers, etc. The British address is 20, Grosvenor Gardens, S.W.1, where A. G. M. Mitchell is authorised to accept service of process and notices on behalf of the Company. The Directors are: Sir Arthur Robinson, Collins House, Melbourne, solicitor. A. G. M. Mitchell, 499, Little Collins Street, Melbourne, engineer. Professor Sir Thomas R. Lyle, Lisbuoy, Irving Road, Toorak, Australia. P. C. H. Hunt, 360, Collins Street, Melbourne, engineer.

PERSONAL NOTICES.

MARRIAGES.

BOND—PALES.—On Jan. 8, at St. James's, Piccadilly, Flt. Lt. A. G. Bond, A.F.C., R.A.F., eldest son of the late A. J. Bond and Mrs. Bond, of Walford, Herefordshire, to Hylda Olive Pales, daughter of Mr. and Mrs. W. Pales, of Alexandra Park.

LEE—MILLAR.—On Jan 6, at St. Chrysostom's Church, Victoria Park, Manchester, Herbert Cyril, Flg. Off., R.A.F., Hawkinge, Kent, eldest surviving son of Mr. and Mrs. H. R. Lee, of Longdon, Wellington, to Edith Maud, only daughter of Mr and Mrs. Charles R. Millar, of Manchester

PORTER—DENISON.—The marriage arranged between Flt. Lt. C. E. V. Porter, R.A.F., and Mrs. C. C. Denison took place quietly in London on Dec. 17.

COOMBES—WEBSTER.—On Jan. 2, at St. John the Evangelist, Penge, Ernest Ronald Henshaw Coombes, R.A.F., to Gwendolen Eileen Mary, youngest daughter of Mr. and Mrs. John E. Webster, of 18, Queen Adelaide Road, Penge.

BROOKE-POPHAM—HUGONIN.—On Jan. 5, at All Saints' Parish Church, Ledsham, Yorkshire, Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., only son of the late Mr. Henry Brooke, of Wetheringsett, Suffolk, to Miss Opal Hugonin, younger daughter of Mr. Edgar Hugonin and the late Mrs. Hugonin and niece of Sir Granville Wheler, Bart., of Ledston Hall, Yorkshire. Air Commodore F. Vesey Holt, C.M.G., D.S.O., R.A.F., was best man.

FORTHCOMING MARRIAGES.

CASH—DIXON.—A marriage has been arranged, and will take place during January in Paris, between Mr. Rowland W. Cash (late Capt., Sherwood Foresters and Royal Air Force), eldest son of Mr. J. Theodore Cash, F.R.S., of Hereford, and Mrs. Francis Dixon, of Paris.

FIELD—ASHWIN.—The marriage between Mr. Douglas Field, R.A.F., and Miss Joan Ashwin will take place at St. Mary-le-Strand on Jan. 16.

BIRTH.

DOYLE.—On Dec. 28, at Ramslag, Okehampton, Devon, the wife of J. E. Doyle, D.F.C., daughter of G. V. Burd, of Okehampton, and granddaughter of the late W. J. Harris, of Halwill Manor, Devon—a daughter.

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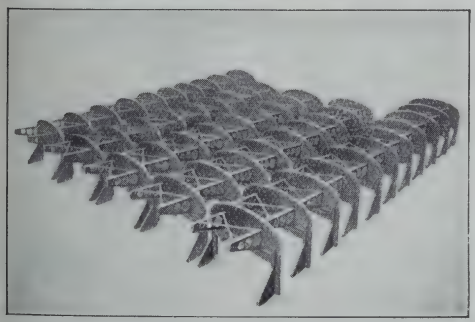
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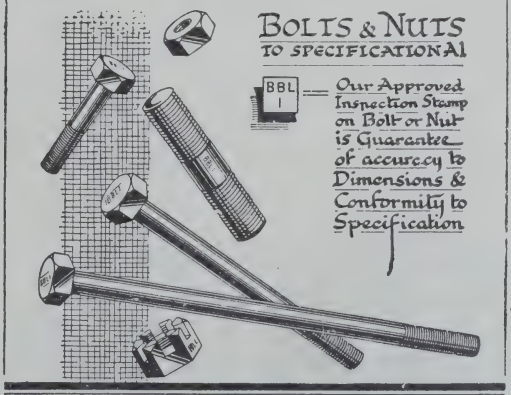
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THE AEROPLANE

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VOL. XXX. No. 3.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON AVIATION IN 1925.—II.

The Technical Side.

On the technical side of aviation, as one has already indicated, things have not been as satisfactory as they might have been. Here Service Aviation and Civil Aviation are almost inextricably mixed. And, in both, progress (minus or plus) depends on the Air Ministry's tame experts with their troupes of performing formulæ and so forth.

War aeroplanes cannot be issued to squadrons till their design has been approved by the experts, and civil aeroplanes cannot fly till they have been certified as airworthy by the experts. And the engines used, both in Service and Civil Aviation, are to all intents and purposes the same—but for the fact that the R.A.F. still uses vast quantities of American Liberty engines manufactured during the War, whereas civil aeroplanes are all equipped with British engines with perhaps the exception of a few privately-owned machines.

So far as Civil Aviation is concerned the experts have been unable to do much harm. The departments with which it is chiefly concerned are the Stress Department, which calculates whether the machines are adequately strong to carry the loads for which they are intended (though, so far as our only air line is concerned, they are seldom loaded to their limit), and the Aeronautical Inspection Department, which certifies whether they are properly built or not.

In both these departments we are singularly fortunate. The "stress merchants," as they are commonly called, really know their jobs as constructional engineers. And though occasionally they may be compelled to calculate on insufficient data, owning to universal ignorance of what the air really does to an aeroplane, their calculations almost invariably work out on the side of safety.

Because of this universal ignorance aeronautical engineering is still, abroad just as much as at home, somewhat amateurish—a statement which one repeats in spite of the fact that when one made it some months ago one incurred the wrath of at least one person of some importance in the Aircraft industry. But because an intelligent amateur is very often more useful than a pig-headed professional we get along very well, considering.

The A.I.D., which, during the War, was one of the chief hindrances to the output of aircraft, has during the past year or two become one of our most helpful institutions. The policy of those who are now in control seems to be to maintain the high quality of British aircraft by trusting to the anxiety of the various manufacturing firms to maintain their own trade reputations rather than by depending on minute inspection by minor officials.

Instead of squabbling over the life and pastimes of a split-pin the attitude of the A.I.D. is rather to say to the manufacturer, "Build your machines in the way you think best, and Heaven help you if anything turns out to be defective when the machine is finished." The result is that, partly for the sake of its own reputation and partly because of the expense involved if a defective part is discovered in a finished aeroplane, most manufacturers have now instituted a system of inspection in their own factories which is at once more severe and more effective than was the old A.I.D. system.

One hears on all sides that the resident A.I.D. inspectors who are appointed to the individual firms are as helpful and as valuable to those firms as if they were members of the firm's own staffs. And the firms' own inspection staffs are generally composed of former A.I.D. Personnel.

The Real Obstacles.

The real hindrances to progress are the funny little watertight departments in the Air Ministry and at Farnborough which deal with special gadgets and so forth. One department is supposed to look after compasses, another looks after radiators, another looks after wireless, another looks after guns, another looks after bombs, another looks after electric lighting, and so forth and so on. Each department is only concerned with the fitting of its own particular gadget and so long as that works satisfactorily the department concerned



FROM THE AIR.—A photograph by the Surrey Flying Services of Southend, showing the shore end of the pier.

does not seem to care whether the aeroplane ever flies or not.

The result is that the gun man wants his guns fitted in one place which interferes with the wireless, or the compass, and the compass man wants his compass where it interferes with the guns or the wireless or the controls. And the wireless man wants his apparatus where it interferes with everything else in the machine and so there is continual delay while the different departments dispute among themselves.

Even so the departments concerned do not always know how best to use their own gadgets. For example, in a certain well-known machine the department which has to do with compasses insists on fitting the instrument exactly where the pilot cannot see it, because the control column gets in the way. And when those machines are delivered to the squadrons, the squadron workshops proceed to take the compass out and perch it on a bracket alongside the pilot where he can see it perfectly. And so all the original work of fitting the compass is money wasted and the space where it is fitted originally is wasted because it might be used for something else. In certain other machines the compasses are fitted so that they are in the dark and cannot be seen at all.

In one instance, within one's own knowledge, a dispute between two of these departments actually held up the delivery of certain very important machines for six weeks. And if the manufacturer had merely had the various gadgets issued to him with instructions that he should fit them where they best fitted into the design of his machine all the delay would have been saved and the responsibility for failure would have been cast upon the manufacturer.

Experimental Waste and a Suggestion.

One of the worst effects of these experts is that every little department insists on having every one of its gadgets fitted in every experimental machine which is produced. Consequently, what with a couple of weeks' delay over this gadget, and three or four weeks' delay over another, and odd weeks here and there over yet others, it is nothing unusual for a purely experimental machine of a new type to be delayed for six months or more between the time when the machine is ready to be assembled and the time when it actually flies.

One suggests that where new type machines are concerned saving of time in delivery is the essence of the contract. The great idea is to find out whether a machine of a new type flies properly, whether it is easy to control, whether it is nice to fly and what are its actual performance figures for speed, climb and load carried.

All this can be discovered without fitting a single one of the Air Ministry gadgets which cost so much in time and money to fit. The only gadgets it really needs are the self-recording instruments used in measuring performances during a type-test.

So long as the manufacturer allows space in his original design for the fitting of the gadgets there is no earthly need to fit them in an experimental machine. Months of time and many hundreds of pounds of money can be saved by leaving them out till the machine has passed its type tests.

One came across a case the other day of a comparatively new type of machine which had been rigged up complete with wireless set, including a matter of £100 worth of work or so in bonding up all the metal part (an operation which some wireless people say is unnecessary). It had all its guns and bomb racks and everything else on board. A Service pilot took it up under weather conditions when it was unwise to do so, and promptly pushed it straight into the ground, writing off not only the machine but its engine and everything else on board. In fact he himself was about the only undamaged part of the apparatus.

The amount of damage done in that machine in the form of abolished gadgets which need never have been in the machine at all until it had passed its type-tests must have run to several hundreds of pounds. And if they had not been fitted the machine would have been ready to test some time late last Summer or early last Autumn instead of being tested in the Winter weather which was responsible for the crash.

A still more glaring case was that of a bomber which was built recently. The Air Ministry wireless experts insisted on putting into it three types of wireless, presumably a Morse set, short-wave telephones and long-wave telephones. The R.A.F. Test Station to which it was to be sent warned the makers that they did not want wireless in the machine, and that if it were fitted it would be taken out when the machine arrived. But the Air Ministry experts insisted on fitting wireless at a cost of weeks of delay and hundreds of pounds worth of work, in bonding and fitting. When the machine reached the Test Station more time and money were spent in taking the wireless apparatus out of it. And at the finish, some £1,200 worth of wireless material was left lying in the sheds, much of it definitely scrap. It is said that some of this apparatus would have made the Daventry and Bound Brook high-power broadcasting stations turn green with envy.

One hopes that these points will be considered by those in higher authority. Naturally it is difficult for highly-placed officials to get straightforward statements from manufacturers or employees of manufacturers when they ask for information on such subjects as these. The manufacturer may wish to open his heart to the official personage, but he knows pefectly well that if he does so he will incur the hostility of every water-tight expert in the Air Ministry, and so will increase his difficulties in trying to satisfy those experts, even



UEBER DEUTSCHLAND.—A photograph by the Deutscher Aero Lloyd of the world-famous Saxon bridge.

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if he does not definitely jeopardise his chance of securing further orders or of getting his experimental machines approved.

In fairness to the Supply and Research Department it must be said that Air Vice-Marshal Sir Geoffrey Salmond, the Air Member for Supply and Research, and Air Commodore Halahan, Director of Technical Development, have laboured hard during the past year to accelerate the production and delivery of aeroplanes and engines. But when they took over they found such an appalling system, so bound round with red tape, and so honeycombed by little squabbles and intrigues among all the water-tight departments, that they have simply been unable to effect a revolution in the system.

They have undoubtedly improved matters a very great deal. On many occasions, with the assistance of the Air Staff, and backed by the Air Council, they have cut through red tape and have helped progress to an enormous degree. One can only wish them still further success in their efforts during the coming year.

Engineers in the R.A.F.

Naturally the technical affairs of the Air Force, and in the Air Ministry, are largely affected by the question of engineers in the R.A.F. itself. During 1925, as in previous years, there has been much discussion as to whether the R.A.F. ought to have within itself a special engineer branch as in the Navy or an engineer corps as in the Army.

The authorities of the Air Force, which on this particular subject means the Air Staff and the chiefs of the Supply and Research Departments in agreement, have decided that all engineers in the Air Force must first of all be pilots and that after having become pilots they may then specialise on engineering. Thus the Air Force will in due time have an engineer grade rather than a branch or corps.

Fortunately the Air Council has been called upon to make this decision quite early in the development of aviation when, as one has already said, all aeronautical engineering is still in its infancy. Quite a number of fairly senior officers in the R.A.F., that is to say among Squadron Leaders and Wing Commanders, know quite as much about real aeronautical engineering, apart from high-brow stuff such as is called "aerodynamic science," as does any aircraft designer or constructor. In fact several firms have engaged officers from the R.A.F. as their chief engineers to oversee the work of their design departments and workshops.

The Training of Engineers.

The success of the engineer grades in the Air Force in the future must therefore depend almost entirely on the training which the Air Force can give to the junior officers who intend to specialise as engineers. So far as one can gather, the training which an officer can acquire to-day at the Aircraft Depot at Henlow is just about as good as he could get if he served his time in any aircraft factory. In fact it is rather better, because at Henlow he has to deal with all kinds of different aeroplanes and engines and gadgets, whereas while serving his time in a factory his knowledge would be limited to the various types of one particular make of machine. And certainly the standard of workmanship at Henlow is as high as that in any factory in the World.

There should be a possibility of instituting a special course for engineer officers at Henlow, which would carry with it some sort of qualification which on the engineering side would stand for much the same thing as does a *p.s.a.* on the operations side, or a *p.s.c.* in the Army. Such a qualification ought to be worth a great deal more to an aeronautical engineer than the mere B.Sc. which can be got by passing purely theoretical examinations at a University.

The Superior Persons.

The foregoing remark reminds one that part of the Air Ministry scheme for R.A.F. engineers is that a certain number of officers shall do University Courses. And one has somehow acquired the idea that officers who have done these courses will be regarded as the bright particular stars of the engineering grades.

No doubt there is a type of man who besides being a really useful engineer can also pass examinations in theoretical subjects. And such a man deserves special promotion. But the scientific side of aeronautics is far away behind the practical engineering side. And it would be a great pity if university degrees, without proof of practical knowledge as well, were allowed to give a man any advantage over practical men who really knew their jobs.

The only use that one has ever discovered for the theoretical scientist in engineering is to make him explain to the practical man why a certain apparatus works after the practical man has made it work. The value of this is that the scientist's explanation, which is wrong quite as often as it is right, may occasionally suggest to the practical man some fresh idea for improving his apparatus, in that it may put him onto a new line of thought.

The high-brow scientist is as a rule utterly vague in a singularly precise way, but he can be made useful by practical men.

So far one has never heard of a successful aeroplane being designed or built as the result of the work of theoretical scientists. And one knows of many scientific failures to produce flying machines.

Real Research.

Of course there is also the practical scientist, or "research merchant," who is not concerned with design but with investigating aerodynamic phenomena. He is in quite a different category because he is doing actual practical work.

Quite a lot of very useful things have been discovered in wind-tunnel experiments, at any rate since the people who work the wind-tunnels have been guided and governed by people who know something about flying. In the early days of aviation wind-tunnel results were generally utterly misleading because the people who worked the tunnels knew nothing about aeroplanes. In these days the real wind-tunnel specialists do know their jobs.

For example, the Curtiss racers which have beaten World's records both as land machines and seaplanes have been developed to their present stage of perfection almost entirely as the result of wind-tunnel experiments. And the 1925 machines had certain modifications made as the result of experiments in a wind-tunnel using compressed air at a pressure of about three atmospheres. In this the action of the air at a speed of 60 or 70 miles an hour simulates to a reasonable degree the action of free air at something over 200 miles an hour.

Of course there is no compressed air wind-tunnel in this country, and probably there will not be for several years. The Americans are far ahead of us in practical research, and one only mentions this point as indicating what can be done by scientific research on practical lines.

Useful Engineers.

An officer who has done a course of practical engineering at Henlow could certainly claim to be a genuine aeronautical engineer. And having had his early training as an ordinary Flying Officer he would be distinctly a more useful engineer in the Air Force than if he had merely entered as an engineer and stuck to engineering, thus acquiring as little knowledge of flying and airmanship as the average naval engineer has of navigation and seamanship.

Provided that the means which already exist in the R.A.F. are properly employed for training the engineer grades, and provided that when an officer has decided to specialise as an engineer he is allowed to spend sufficient time on his engineering education, there is no doubt that the R.A.F. can produce aeronautical engineers at least as good as any other

Shipbuilding began long before there were official shipbuilders, and steam engines operated long before naval engineers were invented, and general engineering had been practised for centuries before Army engineers became a specialised corps. But Air Force engineering has the advantage of starting level with civil aeronautical engineering, and owing to the variety of experience which an Air Force engineer can obtain, experience such as can only be obtained by the civil aeronautical engineer by swopping about from firm to firm, the R.A.F. engineer may very well become the best of his kind in the World.—C. G. G.

(To be continued.)

THE FEDERATION AERONAUTIQUE INTERNATIONALE AND THE SCHNEIDER TROPHY.

The Committee of the Fédération Aéronautique Internationale met in Paris on Monday, Jan. 11, 1926. Delegates from thirteen countries attended, the Royal Aero Club being represented by Lieut.-Col, M. O'Gorman, Major J. S. Buchanan and Mr. H. E. Perrin.

The Schneider Trophy.—France and Italy proposed the carrying of a "useful load." This was opposed by Great Britain and America and on a vote being taken it was decided that no modification should be made in the rules for the next race.

The question of the date, which has been fixed for October 24, 1926, was discussed at some length. It was decided that the F.A.I. would raise no objection to the Royal Aero Club forwarding a request to America to postpone the date to 1927.

[Note:—One gathers, unofficially, that at the F.A.I. Meeting, those nations in favour of maintaining present conditions in the Schneider Contest were:—The United States, Great Britain, Spain, Holland and Finland. In favour of imposing a load were:—France, Italy, Roumania, and Czecho-Slovakia. (It may be noticed that the two last are nations whose aerial armament France is building out of money which is owing to us.) The following nations refrained from voting:—Japan, Belgium, Sweden, and Norway. Thus it may be seen that Finland really won the day in favour of the Nordic policy of speed for speed's sake.—C. G. G.]


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THE ROYAL AERONAUTICAL SOCIETY'S DIAMOND JUBILEE

On Tuesday, Jan. 12, quite a large concourse of people, eminent and otherwise, gathered together in the name of Science at South Kensington to celebrate the Sixtieth Anniversary of the founding of the Royal Aeronautical Society.

As most readers of this paper know, the Royal Aeronautical Society is supposed to represent the Science of Aerodynamics in Great Britain, just as the Royal Aero Club is supposed to represent the Sport of Flying and as the Air League is supposed to represent Air Propaganda. Each of these associations goes about its work in a way which is characteristic. The Royal Aeronautical Society did its party in a way which was typical of scientists in its curious combination of vagueness and precision.

The cards of admission emphasised in two places the fact that the entrance to the Conversazione was through the Imperial College of Science, S.W.7. Now S.W.7 means anywhere between Harrods and the Queensboro' Club. But most people have a dim idea that the Imperial College of Science is somewhere in the amorphous mass of buildings which begins at the Brompton Oratory and ends up against the orderly row of eligible residences which compose the West side of Queen's Gate.

Most people know that the block of offensively ornate buildings in question includes such things as the Albert Hall, with the Albert Memorial, London's permanent eyesore, as a kind of outcrop, the Imperial Institute and something that is vaguely known as the South Kensington Museum, which houses stuffed animals, prehistoric skeletons, and the most elementary species of steam engines. And some people have a hazy idea that the Imperial College of Science is somewhere in this architectural chaos.

Just by way of making the puzzle more puzzling the card of admission had on its back a map on which two red arrows curving gracefully in Imperial Institute Road pointed to a space labelled "Science Museum." In one little corner was a place labelled "Imperial College Office," but that did not seem to have anything more to do with the Imperial College of Science as such than did other blocks which one was told were the Goldsmiths Company's extension or the Royal School of Mines or the Victoria and Albert Museum (Art).

The key index indicated that a block numbered "3" on the East side of Exhibition Road contained the Aeronautical Section of the Science Museum. But nowhere at all on the map did the name of the Imperial College of Science appear. So one was left to deduce from the red arrows that one went into the Science Museum and then somehow trekked across the road to the Aeronautical Section.

However, on arriving in Imperial Institute Road we discovered an array of automobiles suggestive of a motor show, or a fashionable revue, indicating that quite a number of important people must be visiting the Science Museum. And so, following the crowd, we discovered that we had struck the right place by the usual English method of muddling through instead of making use of applied science.

Once inside the vast building a series of arrows directed us down some hundreds of yards of Arctic corridors to an immense subterranean cavern in which we found an unrivalled collection of aeronautical relics, human and material.

Some day, when the Navies cease from troubling and the Air Force is at rest, one hopes to publish something like a fitting and proper description of the ancient aircraft and aero-engines and gadgets and books and things which have been accumulated in that cavern and have been carefully and skilfully arranged of late by Mr. M. J. B. Davy, who is now being assisted by Mr. G. Tilghman Richards. All one can say about them here is that they constitute what is probably the finest collection of aeronautical relics in the World and should be studied in detail by everybody who is really interested in aeronautics. But on this occasion we are concerned with the human rather than with the mechanical relics.

"70 Lions in One Act."

Almost all the living pioneers of aviation were there, and there were quite a good many who bore about the same relationship to the pioneers of modern flying that the pre-Adamite races do to the descendants of Adam. There were aged gentlemen who had to do with balloons and queer flapping-wing machines long before the Wright Brothers persuaded their first machine to keep off the ground for a few yards, and still longer before Mr. A. V. Roe and the late S. F. Cody hopped from the earth in England.

There were also some of the people who have really made modern flying what it is, the constructors and designers of our modern highly efficient (so far as the Air Ministry experts permit) aeroplanes and engines. And there were many of the Modock tribe whose interest in connection with aviation is rather in the direction of limelight oratory than practical science.

Also there were people with slide-rules protruding from their pockets and that curiously rumpled air which seems inseparable from a certain type of cerebral activity. And there were foreign air attachés and a sprinkling of foreign aeronautical scientists. And there were numbers of the inevitable Japanese, who seem to penetrate to every place where weapons of offence are part of the exhibits.

There were, of course, a number of our highly esteemed official people to give the necessary *cachet* to the proceedings. And each and every one of these varied classes brought its complementary women folk with it, as entertaining and as varied as themselves. Altogether the Royal Aeronautical Society's Conversazione was thoroughly representative of the human side of British Aeronautics.

The Beginning of the Society.

Presumably one ought to mention somewhere here that the Aeronautical Society was founded on January 12, 1866, at a meeting at Argyll Lodge with the Duke of Argyll in the Chair. The late Mr. F. W. Breary and the late Mr. James Glaisher were the Secretary and Treasurer respectively of the Society, and the Duke of Argyll was its Patron.

At that time the only practical aerial vehicle was the ordinary spherical balloon of the hot-air or gas-filled type. The scientists of the period were still prepared to prove conclusively that no heavier-than-air vehicle could possibly maintain its position in the air and though people had thought of navigable balloons none had yet been produced. Real aerial navigation is entirely a matter of the present century.

As a matter of fact at the first general meeting of the Aeronautical Society, held on Jan. 27, 1866, the late Mr. F. H. Wenham, who himself constructed a model aeroplane which flew, read a paper on aerial locomotion. And in 1868 the Society organised an exhibition at which the late John Stringfellow, who had made a power-driven model aeroplane fly, won a prize of £100 for the lightest steam engine, proportionately to its power, yet produced.

Annual reports were published by the Society from 1867 to 1893, when Major P. F. S. Baden-Powell, who is happily still with us, founded the Aeronautical Society's Journal. In 1911 the grades of Fellow and Associate Fellow of the Society were created and already these grades give some scientific status to their holders.

In 1918 His Majesty the King conferred on the Society the right to use the prefix "Royal."

The Conversazione.

At the Conversazione on Jan. 12 those who attended were received by Air Vice-Marshal Sir Sefton Brancker, Chairman of the Council. When they had been gathered together Sir Sefton, speaking as Chairman of the Council, said that Sir Samuel Hoare was the best Air Minister the country had ever had and that his work for British Aviation would bear fruit for many years to come. The Society was particularly indebted to Sir Samuel for a grant from the Air Ministry of £250 a year for five years, a sum which had in fact saved the Society from going out of existence.

Sir Samuel Hoare then delivered a short address in which he expressed his keen interest in the Society and congratulated it on the work it had done in the past sixty years. Sir Samuel said that he understood that the Society had an extensive programme for the enlargement of its activities and that as this entailed the need for financial support Mr. Hubert Scott Paine had promised a subscription of £50 a year, in addition to which Lord Cowdray had promised another £50 a year if nine others would follow his example.

Mr. Hodgson, the Treasurer of the Society, then gave an interesting account of the history of the R.Ae.S.

One's personal appreciation of the speeches was somewhat marred by the fact that as a member of the audience one was compelled to stand among a large number of glass cases containing working models of real engineering work, albeit perhaps of almost prehistoric types. Unfortunately these models had been allowed to go on working, and that which was immediately behind one emitted a rhythmical wheeze which at first one took for the breathing of one of the aboriginal members of the Society suffering from asthma.

Thereafter those present proceeded to refresh both body and mind. Of the exhibits certainly that which attracted the most interest was the Reid Reaction Time Indicator, an ingenious apparatus invented by Flt. Lt. G. H. Reid to test individual aptitude for flying. The particular apparatus on view was that which was presented by Sir Charles Wakefield to the Royal Aero Club.

Some Comments.

So far as the Society is concerned one believes that what is wanted is more intelligent activity on the part of the Council rather than more financial support. And certainly, if he can spare time from his official duties, Sir Sefton Brancker is the man to stir up the necessary activity.

He stated recently that an income of £1,000 a year is necessary to the Society's existence. In fact some eighteen months ago the Society got into such low water that it could no longer afford a permanent secretary, and since then has had to depend on voluntary work. Besides the Air Ministry's

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£250 a year already mentioned the S.B.A.C. has given £200, the Anglo-American Oil Company has given £50, other big oil interests have promised help in the future and there are also the subscriptions promised by Mr. Scott Paine and Lord Cowdray. But with anything like activity on the part of the Council the membership alone should easily provide the necessary £1,000 per annum.

Purely as a matter of personal opinion, one suggests that the chief reason for the Society's regrettable position is that it does not create enough interest in its lectures. It has held them at 5.30 p.m., which is precisely the wrong time of the day, when the very people who ought to attend, that is to say the design staffs and works staffs of the aircraft factories, cannot get away from work. Now it proposes to hold them at 6.30, which still does not give the working members of the Aircraft Industry time to get into Town for the lectures and interferes with the regular dinner hour of the more exalted of those interested in aeronautics even worse than did the 5.30 lectures.

Why the Society cannot begin its lectures at 8.30, so as to give everybody a chance of getting away from work and having a meal and then making a complete aeronautical evening of it, one cannot understand. Even the most suburban of technical people can get home after 11 p.m. in these days.

Also there is no use in holding lectures in the little library of the Society in Albemarle Street if the Council hopes to attract audiences such as will help to increase the membership.

One gathers that the Royal Aero Club offered its big new lounge as a lecture hall to the R.Ae.S. and that the offer was refused because the scientists did not wish to appear to be associated with the sportsmen. That lounge seats about seventy people at dinner so it could easily accommodate between 150 and 200 at a lecture. And if the Society could raise an average of 150 at its meetings it would certainly increase its influence very considerably.

Also the papers themselves are as a rule of the wrong kind. They are neither sufficiently technical to attract the pure and applied mathematician nor are they as a rule sufficiently practical to attract either the workshop engineer or the actual flying man. And those who are responsible for the lectures seem to have no idea of how to work the Press before the lectures take place so as to attract an audience.

One can only hope that under Sir Sefton Brancker the Council may acquire the necessary energy and common sense to make the Society a success. But if it insists on continuing the policy of the past four or five years then the Society will be better dead, sad as it would be for the British Empire to lose the credit of possessing the oldest aeronautical association in the World.—C. G. G.

SCHNEIDER TROPHY AFFAIRS.

The present position of affairs in regard to the Schneider Trophy Contest is as follows. The U.S. authorities have stated that the contest shall be held on Oct. 24-26. But there is no need for them to decide irrevocably until Mar. 31. Meanwhile the Royal Aero Club have cabled to the N.A.A. that Britain will not compete if the contest is held this year but will compete if it is held in May or June 1927.

It seems improbable that any other nation will compete this year—with perhaps the exception of France, which, from certain inside information, one believes to be capable of winning.

There can be no advantage in the way of world-wide advertisement to America to win the Trophy with a walk-over. It would be a pity for the greatest International Air Trophy to fizzle out without a contest. No doubt the U.S. people are confident that they can win again in 1927, so it would be to their advantage to postpone it and make a good show of the contest.

They need not imagine that we shall gain any advantage by the postponement, for it is unlikely that anyone in England will start seriously to build a challenger more than six months before the event. One has frequently pointed out that as we neglected to start building a new racer last October, there was no time to do so now. While saying that one was taking into consideration the way things are done here. Of course, an energetic firm, without Air Ministry hindrance and provided they had no real bad luck, could build, and test thoroughly, three racers in six months. But unfortunately the Air Ministry experts are not likely to go just yet. When they do we shall be able to build experimental aeroplanes at a third of the present cost and in a third of the present time.

It is actually found in practice that when a firm quotes a price for an aeroplane it has to allow for hindrance and alteration by the Air Ministry. This trebles the original price. If we had no Air Ministry experts to deal with, aeroplanes would be just as safe as, or even safer than, they are now (for manufacturers have their reputations to consider). But our Air Force would cost half or less of what it costs now.

One makes this suggestion to the Colwyn Committee. If we scrapped the technical department of the Air Ministry, lock, stock and barrel, we should have time and money to build Schneider racers, we should have better Air Force equipment, and we should have money left over for other important affairs.—G. D.

A NOTABLE AUSTRALIAN FLIGHT.

Another remarkable flight has been accomplished by Colonel Brinsmead, the Controller of Civilian Aviation to the Commonwealth Government. The object of the flight was to inspect the route between Charleville and Cloncurry and to survey a proposed extension northward to Normanton.

Colonel Brinsmead used the same de Havilland 50 aeroplane, with 240 h.p. Puma engine, in which he made a 7,000 miles circuit of Australia in 22 days immediately after the machine had been taken from its packing case.

The pilot of the machine was Capt. E. J. Jones, M.C., A.F.C., who has accompanied the Controller on all his long flights, and Mr. O. H. Howard accompanied the expedition as engineer.

The first stage of the journey, on Dec. 1, was one of 850 miles from Melbourne to Charleville, the Southern terminus of the Queensland and Northern Territories Aerial Services' route. On the next day the flight was continued to Longreach, the Q.A.N.T.A.S.' headquarters, where discussions with Mr. Hudson Fysh, the Managing Director, occupied the whole of Dec. 3. The night of Dec. 4 was spent at McKinlay, a station 240 miles North-west of Longreach. The last outward stage to Normanton via Cloncurry, the present Northern terminus of the route, was covered on Dec. 5.

The homeward journey, which is tersely described in the report of the flight as "uneventful." was made in two days—810 miles being flown on Dec. 6 and on the following day 850, bringing the total mileage to 3,320, which was completed in 37 hours 25 minutes flying time.

It is interesting to note that the Queensland and Northern Territory Aerial Services Company has acquired manufacturing rights from The de Havilland Aircraft Company, entitling them to build under licence D.H.50 machines for use on the new extension.

INTERNATIONAL MOMENTS.

The Gordon Bennett Balloon Race.—At the last meeting of the F.A.I. it was decided to hold the Race towards the end of May, the exact date being left to the Aero Club of Belgium, the holders.

Tests for Aviators' Certificates.—On the proposal of the Royal Aero Club, it was decided that the tests for Aviators' Certificates should no longer include an obligatory flight of one hour at an altitude of 6,000 feet. The height of 6,000 feet, however, must be attained.

U.S. NAVAL AVIATION.

On Jan. 13 the U.S. House of Representatives Appropriation Committee recommended an expenditure on Naval Aviation of $18,674,000 (£3,734,000), being an increase of $3,693,000 (£738,000) over current funds. $9,062,000 (£1,813,000) will be applied to new aircraft and equipment.

In addition to this sum, $11,300,000 (£2,260,000) is allotted to aircraft-carrier construction, for the completion of the U.S.S. *Saratoga* and *Lexington*.

A MERITORIOUS SOUTH AFRICAN FLIGHT.

On Jan. 14 an aeroplane belonging to the South African Air Force and piloted by Major Meintjes and Lieut. Roos, flew a total distance of 1,200 miles in 13¼ hours without a stop. They left Pretoria at 04.00 hours, and, flying a circular course, arrived back at Pretoria at 17.15 hours.

The machine used was a D.H.9 (240 h.p. Siddeley Puma engine) fitted with additional tanks. The object of the flight was to demonstrate that an aeroplane can, in case of necessity, reach any part of South Africa in one day.

THE FOKKER IN AMERICA.

The Continental Motors Corporation, of Detroit, Mich., have purchased a Fokker F.VII 3m. (three 200 h.p. Wright Whirlwind engines) which they propose to use for the transport of their staff in charge of the regular inspection of the company's factories throughout the state of Michigan.

A new air line, New York-Cuba, via Florida and Key West, was inaugurated towards the end of last year, and a Fokker F.VII 3m. has been put on this service. On the occasion of the first flight over this route, which is 2,500 miles long, 90 miles of which are over the sea, Mr. Fokker himself was one of the passengers, thus taking advantage of the opportunity to spend his Christmas under the palms of Havana.

It is not known whether this is to be a regular service or not. It certainly savours of Fokker publicity.

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THE ROYAL AIR FORCE.

The London Gazette

Jan. 12.

GENERAL DUTIES BRANCH.—The following Flight Cadets having successfully passed through the R.A.F. Cadet College, Cranwell, are granted perm. comns. as Plt. Offs., with effect from and with seniority of Dec 16, 1925:—

C. M. Heard, H. G. Wisher, H. D. Spreckley, E. B. Steedman, V. O. Eyre, W. H Merton, T. G. Pike, P. J. Stapleton, A. W. B. Hale, E. L. S. Ward, P. de C. F. Smith, A. L. Holden, R. F. Shenton, G. N. Pilcher, H. W. Charnock,, H. F. G. Southey, H. W. Pearson-Rogers, E. B. Webb, A. R. Leslie-Melville, P. W. Lowe-Holmes, D. W. R. Ryley, J. B. M. Wallis, A. P. Bett, L. H. Anness, and J. V. Yonge.

The following are granted perm. comns. in the ranks stated (Jan. 1):—

FLT. LTS.—A. R. Jones and W. J. Seward. FLG. OFFS.—L. G. Nixon; O. B. Swain.

The following Plt. Offs. are promoted to the rank of Flg. Off. (Dec. 15, 1925):—E. A. H. Fisher; H. R. Lowry.

Wing Cdr. T. G. Hetherington, C.B.E., is placed on half-pay, scale B (Jan. 14).

The following are placed on the Retired List at their own request:—Flt. Lt. W. A. Skeate (Jan. 6); Obs. Off. H. J. White (Jan. 9); Flt. Lt. C. E. Wardle (Jan. 13).

Flg. Off. F. W. Barkley (Lt., Indian Army, retired) resigns his S.S. comn. (Jan. 12).

The following Flg. Offs. relinquish their S.S. comns. on account of ill-health (Jan. 12):—A. S. M. Meyrick-Jones; T. J. Woods. Flg. Off. F. J. C. Rybot (Lt., R.A.) relinquishes his temp. comn on return to Army duty (Jan. 9).

STORES BRANCH.—Plt. Off. St. J. F. Wintour is confirmed in his appointment in the Stores Branch and is promoted to the rank of Flg. Off. (Nov. 25, 1925); Flt. Lt. K. A. Smith is placed on the Retired List on account of ill-health (Jan. 13).

ACCOUNTANT BRANCH.—The following Flg. Offs. are granted perm. comns. in the rank stated (Jan. 13):—J. Charles; M. H. Luker.

The following Plt. Offs. on probation are confirmed in rank and are promoted to the ranks of Flg. Off. (Nov. 10, 1925):—K. E. M. Holmes; J. M. Murray. The following Plt. Offs. on probation are confirmed in rank and are promoted to the rank of Flg. Off. with effect from Dec. 3, 1925, and with seniority of Nov. 10, 1925:—S. W. Hill; R. W. Collinson.

MEDICAL BRANCH.—J. D'I. Rear is granted a S.S. comn, as a Flg. Off. for three years on the Active List with effect from and with seniority of Jan. 1, and is seconded for employment at Royal Sea Bathing Hospital, Margate, with effect from that date; Flg. Off. H. G. Maguire resigns his S.S. comn. (Jan. 13).

RESERVE OF AIR FORCE OFFICERS.—T. Buchanan is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Jan. 12). Flg. Off. H. W. G. Trotman is transferred from Class B to Class C (Sept. 3, 1925); Plt. Off. G. B. Shillaker is transferred from Class A to Class C. (Jan. 12); the comn. of Plt. Off. on probation R. C. H. Joy is terminated on cessation of duty (Dec. 15, 1925).

Jan. 15.

GENERAL DUTIES BRANCH.—The following are granted S.S. comns, as Plt. Offs. on probation with effect from and with seniority of the dates indicated:—N. J. Anderson, G. M. Beattie, J. E. A. Binnie, T. J. L. Bradley, L. S. T. Brown, N. R. Buckle, W. B. Causer, G. R. T. Clarke, M. A. Cowan, P. H. Danger, A. P. de W. de Wytt, C. E. Eckersley-Maslin, C. L. Edwards, G. H. Goodwin, W. E. W. Grieve, H. R. Hawker, J. E. McC. Henderson, D. J. R. Hylton, H. E. Milton, P. A. Moritz, A. W. H. Nelson, E. G. Olson, J. H. Pool, A. A. Radclyffe, H. T. A. Silox, L. M. Timmins, L. S. Tindall, C. Warsow, C. D. G. Welch (Sec. Lt., H.A.C., Infy., T.A.) (Jan. 6); F. H. Bailey (Jan. 7).

Plt. Off. on probation F. Priestman is confirmed in rank (Dec. 2, 1925).

Wing Cdr. A. J. Miley, O.B.E., is seconded for two years' duty with the Chilean Navy (Jan. 19).

Appointments.

Week ending Jan. 18.

GENERAL DUTIES BRANCH.—Flight Lieutenants W. E. G. Mann, D.F.C., J. T. Paine and B. A. S. Lewin, to Electrical and Wireless School, Flowerdown, 10/1. R. J. Read, to No. 6 Group H.Q., Kenley, 8/1.

Flying Officers E. A. Scales, to R.A.F. Depot, 22/1. R. A. P. Roberts, to No. 31 Sqdn., India, 6/1. A. P. K. Hattersley, to No. 24 Sqdn., Kenley, on appointment to a S.S. Comn., 11/1. W. C. Yale, C. F. Caunter, C. G. C. Sullivan, J. E. G. Thomas and R. R. Bennett, to Electrical and Wireless School, Flowerdown, 10/1.

Pilot Officers J. H. C. Purvis and L. A. Walsh, to remain at No. 2 F.T.S., Digby, instead of to No 25 Sqdn. as previously notified. The undermentioned Pilot Officers are posted on appointment to Permanent Commissions from R.A.F. Cadet College with effect from 16/12:—C. M. Heard, to No. 2 Sqdn., Manston. H. G. Wisher and P. de C. Festing Smith, to No. 11 Sqdn., Netheravon. H. D. Spreckley, to No. 12 Sqdn., Andover. E. B. Steedman and A. W. B. Hale, to No. 25 Sqdn., Hawkinge V. O. Eyre, to No. 56 Sqdn., Biggin Hill. W. H. Merton, A. P. Bett and L. H. Anness, to No. 7 Sqdn., Bircham Newton. T. G. Pike, to No. 56 Sqdn., Biggin Hill. P. J. Stapleton, G. N. Pilcher and A. R. Leslie-Melville, to No. 100 Sqdn., Spittlegate. E. L. S. Ward, to No. 24 Sqdn., Kenley. A. L. Holden, H. W. Charnock and J. B. M. Wallis, to No. 32 Sqdn., Kenley. R. F. Shenton and H. F. G. Southey, to R.A.F. Base, Calshot. H. W. Pearson-Rogers, to No. 13 Sqdn., Andover. E. B. Webb, to No. 4 Sqdn., S. Farnborough. P. W. Lowe-Holmes and D. W. R. Ryley, to No. 39 Sqdn., Spittlegate. J. V. Yonge, to No. 16 Sqdn., Old Sarum. R. H. Holmes, to Electrical and Wireless School, Flowerdown, 10/1.

The under-mentioned Pilot Officers are posted to the R.A.F. Depot on appointment to S.S. Comns (on probation), pending posting overseas, with effect from 6/1:—N. J. Anderson, G. M. Beattie, J. E. A. Binnie, T. J. L. Bradley, L. S. T. Brown, N. R. Buckle, W. B. Causer, G. R. T. Clarke, M. A. Cowan, P. H. Danger, A. P. De Woulf De Wytt, C. E. Eckersley-Maslin, C. L. Edwards, G. H. Godwin, W. E. W. Grieve, H. R. Hawker, J. E. McC. Henderson, D. J. R. Hylton, H. E. Milton, P. A. Moritz, A. W. H. Nelson, E. G. Olson, J. H. Pool, A. A. Radclyffe, H. T. A. Silcox, L. M. Timmins, L. S. Tindall, C. Warsow, C. D. G. Welch. F. H. Bailey, to R.A.F. Depot on appointment to S.S. Comn. (on probation), pending posting overseas, with effect from 7/1.

MEDICAL BRANCH.—Flying Officers L. I. Hyder and J. Magner, M.B., to Research Laboratory and M.O.S. of I. on appointment to S.S. Comns., for short course, 6/1.

STORES BRANCH.—Flying Officer P. H. Wynne-Burt, to No. 3 Stores Depot, Milton, 9/1.

Aerial Photography.

A short course of instruction in Aerial Photography, open to Army and Air Force officers, started at the School of Photography, R.A.F., South Farnborough, on Jan. 12, and will disperse on Jan. 30. The course includes instruction in the technical detail and interpretation of photographs taken in the air of ground and aerial subjects.

Other courses in the programme of military instruction courses for the present year include a series of demonstrations to officers of all Arms of Army Gunnery methods and Tank demonstrations. Senior officers of the Navy and Air Force and Gunnery Staff course graduates, will attend the School of Anti-Aircraft Defence at Biggin Hill.

A Staff Exercise.

The first Air Defence Brigade and No. 1 Army Co-operation Wing, R.A.F., took part, along with the Headquarters of the First and Second Divisions and the first Cavalry Brigade, in a Staff exercise carried out under the direction of Lieut.-Gen. Sir Philip Chetwode, Commanding-in-Chief the Aldershot Command. The Headquarters of the Staffs was at Basingstoke.

The exercise consisted of the withdrawal of a corps of three divisions with a cavalry division from the line of the river Kennet, from Aldermaston to Newbury, to a line on the high ground, Tadley-Wolverton-Hannington-Whitchurch, with the object of drawing the enemy into a favourable position for a resumption of the offensive by Sir Philip Chetwode's corps, which was shortly to be reinforced with an additional division. The object of the offensive was to drive the enemy northwards into a bottle-neck made by the converging roads in Newbury, coupled with a wide turning movement by the Cavalry Division. This was to move north of the Kennet and block the enemy's line of retreat north of Newbury.

The Aircraft Carriers.

The Times of Jan. 14 states:—

The date for the completion of the conversion of the cruiser *Courageous* into an aircraft carrier, at Devonport Dockyard, has been postponed for six months, and March, 1928, is now mentioned as the time for the ship to be ready for service. The date for her sister-ship, the *Glorious*, which had been allocated to Rosyth, is uncertain. The aircraft carriers of the larger type now in commission number three. The *Furious* is concluding alterations at Portsmouth, ready to resume duty with the Atlantic Fleet. The *Hermes* and *Eagle* are attached to the Mediterranean, but at the moment the former is lent to China, and the latter is under refit at Portsmouth. The *Argus*, formerly in the Atlantic Fleet, is paid off for repairs at Chatham.

H.M.S. Furious.

The details of the spring cruise of the Atlantic Fleet issued by the Admiralty on Jan. 11, includes

H.M.S. *Furious*.—Portland, Jan. 12. Arosa Bay, Jan. 15-21. Gibraltar, Jan. 23-Feb. 24. Palmas Bay (Sardinia), Feb. 27-Mar. 3. Pollensa, Mar. 5-8. Gibraltar, Mar. 10-18. Arosa Bay, Mar. 20-27. Home Ports, Mar. 30.

The dates are those of arrival and departure.

The Fleet Air Arm Badge.

The Times of Jan. 19 states:—

Supplies of the badge which it was decided last September to supply to officers attached to the R.A.F. for service in the Fleet Air Arm are now ready for issue at the Royal Clarence Yard, Gosport. Two kinds of badges are stocked, one without safety pins, price 2s. 9d., and another with safety pins, for use with white uniform, price 3s. 6d. In future the badge will be assumed by attached officers immediately on joining a training school of the R.A.F. for their intial flying training.

The Fleet Air Arm.

The Times of Jan. 19, states:—

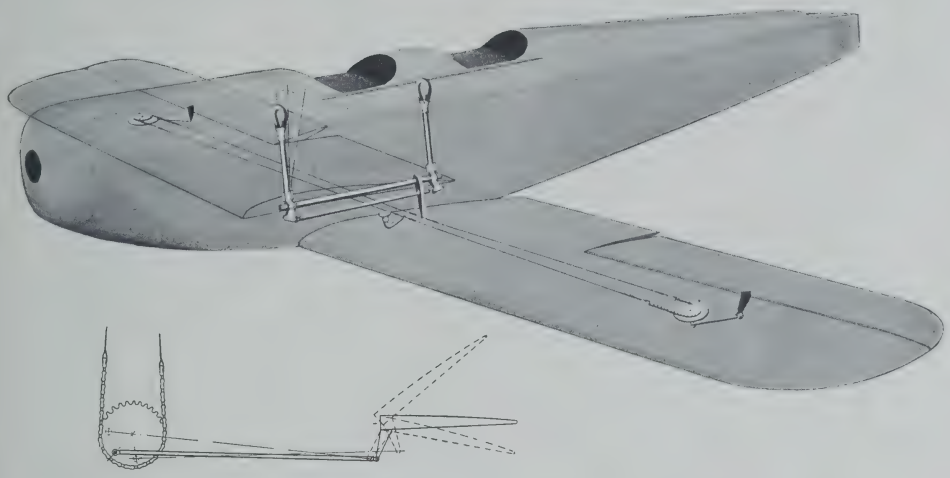
Commander Patrick Butter, who is appointed to-day to the Air Pilotage School at Calshot for a course, has recently been serving as the senior of the naval pilots and observers in the aircraft-carrier *Furious*. The January Navy List shows this ship to carry two commanders, eight lieutenant-commanders, and 39 liteutenants, R.N., of whom one commander, five lieutenant-commanders, and 35 lieutenants are borne as (O.) or (P.)—*i.e.*, for observer or pilot duties. Commander Butter was in command of torpedo craft during the war, including Torpedo-boat No. 18 and the destroyer *Norseman*, and was promoted to his present rank a year ago, after being attached to the *Queen Elizabeth* for observer duties.

Lt.-Cmdr. Butter is shown in the current Air Force List as being a Naval Observer Officer employed at the R.A.F. Base, Gosport. The Units at Calshot are, (1) R.A.F. Base, (2) Met. Station, (3) W/T Station. There is no "Air Pilotage School" in the list of R.A.F. Units in the Air Force List.

This announcement is the second of a series dealing with

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¶ The de Havilland patented system of aileron operation utilises the principle that unequal movement—to a certain predetermined extent—of the upturned and downturned ailerons on an aeroplane gives better and lighter control than equal movement of both ailerons.

¶ At the higher end of the speed range lighter control is obtained without any sacrifice of efficiency, and at slow speeds more effective control without yawing tendencies is achieved and maintained even beyond stalling angle.

¶ The device is incorporated on all modern de Havilland types, and is used, under licence, by the leading British and Foreign Aircraft Constructors.

¶ *The application of the system to the "MOTH" is illustrated in the above diagram: the directness of the cables and absence of parts liable to cause wear, such as pulleys and fairleads, should be noted. The smaller sketch shews the method employed to cause the upturned aileron always to move through a larger angle than the downturned one.*

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The R.A.F in Sweden.

The British Army and Air Force Boxing Team met the Boxing Club of Oslo at Oslo on Jan. 15. The results of the contests in which the R.A.F. took part were :—

Fly-weight.—Hauge (Oslo) beat AC. Watkins (R.A.F.).

Light-weight.—Flt. Sjt. Stone (R.A.F.) beat Larsen (Oslo); AC. Patterson (R.A.F.) beat Erling Michelson (Oslo).

Per Ardua ad Twickenham II.

R.A.F. v. Leicester :—Leicester beat the R.A.F. at Leicester on Jan. 16 by three goals to two tries to a try. The ground was partly frozen and very slippery. The R.A.F. pack had the better of the game in the straightforward scrummaging and shoving, but their effectiveness was cancelled out by the fast dribbling rushes and clever back play of the Leicester team. At half-time Leicester led by 13 points to nothing.

In the second half Sq. Ldr. Russel scored a clever try on the blind side of a five-yard scrimmage, but Leicester scored another goal and a try.

The Times account of the game says :—

Flg. Off. C. B. Wilson played a plucky and effective game on the ice for the R.A.F. By going down on the ball, he saved his side many points. Russell and Bryson were the most effective of the Air Force backs, and Flt. Lt. T. Rose worked very hard in the pack. On a normal day, the R.A.F. pack, it is thought, would have given a much better account of itself.

The Air Force team were :—

Flg. Off. C. B. Wilson, back; Plt. Off. C. P. Vines, Flt. Lt. O. C. Bryson, Flg. Off. S. H. G. Trower, and Flt. Off. Lord Bandon, three-quarter backs; Flg. Off. P. J. Chambers and Sq. Ldr. J. C. Russell, half-backs; Flt. Lt. J. S. Chick, Flt. Lt. E. F. Turner, Cpl. N. W. Johnson, Plt. Off. J. R. Jones, Plt. Off. J. F. Wintour, Flt. Lt. T. Rose, Plt. Off. J. G. Franks, and L.-AC. J. F. Hampton, forwards.

SUCCESS ABROAD.

Unfortunately one can seldom in these days announce foreign orders of importance for British aircraft manufacturers. Therefore there is the more satisfaction in announcing that permission has just been accorded for photographs to be published and part details placed on record of an excellent achievement by a British firm, and a firm run by pioneers of Aviation at that.

Some little time ago the Danish Royal Naval Air Service, wishing to augment its equipment with the very latest in single-seat fighting machines, decided, after a thorough investigation of the merits of all types, both British and foreign, to place an order with The H.G. Hawker Engineering Co. Ltd. for a batch of machines to be fitted with Jaguar engines and the latest accessories.

The machines are on the Danish " part publication " list, and, therefore, one may not give more than a brief general description of them. Following our ingenious British system of nomenclature, they have been christened the " Danecock," and, as will be seen from the accompanying photographs, they bear a resemblance to both the Woodcock and the Heron.

They are of orthodox design throughout, and their general appearance is very attractive. But their internal construction is similar to that of the Heron, with that simple arrangement of square steel tubes which strikes one as so admirably suited to mass production.

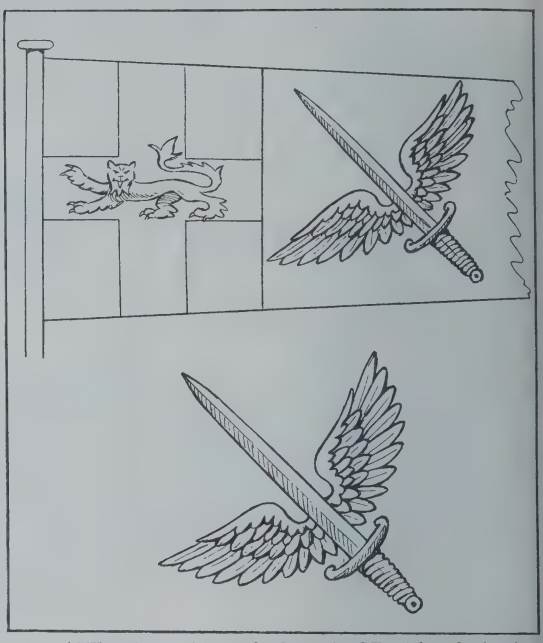
The engine mounting is a very fine job, consisting of a neat and efficient single plate fixing. One is informed that it gives more accessibility than any other type of Jaguar mounting.

The most pleasing feature of the whole business, however, is the general result attained. The Hawker Company, when accepting the order, guaranteed a certain structural weight, a definite performance, and finally undertook, subject to various pains and penalties, to complete by a given date. Mr. T. O. M. Sopwith and Mr. Fred Sigrist set to work, and, knowing them as one does, one felt pretty sanguine as to the outcome of their efforts.

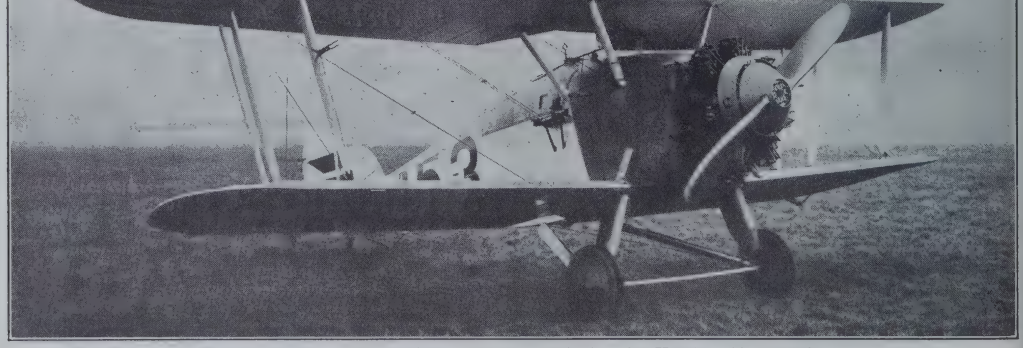
The ultimate result was that the confidence felt by the Danes was fully justified. Not only is the structural weight, despite certain additions, below the original figure, but the performance exceeds the contract estimate in every respect. What is still more important, machines have been tested, accepted, dismantled, packed, and shipped to Copenhagen five weeks before they were due for the first tests.

One feels that not only is this a very creditable piece of work but that it will do much to enhance the reputation of British Aircraft abroad.

Our Danish friends are to be congratulated on their judgment and foresight. They are now in possession of fighting scouts second to none, and one expresses the hope that their Northern neighbours will recognise merit to the extent of following in Danish footsteps.—C. G. G.



AN AUXILIARY AIR FORCE BADGE.—The distinction badge of No. 601 (County of London) (Bombing) Squadron, Auxiliary Air Force. This badge, which was designed by the College of Heralds, has received the sanction of the Air Ministry. It is the sword of London piercing the wings of a pilot. The pennant of the Squadron is also shown in the above sketch.



FOR DENMARK.—The Danecock (Jaguar), which has been built by the Hawker Engineering Co. Ltd. for the Danish Government. Aerodynamically, the Danecock is more or less similar to the Woodcock, but constructionally it embodies the metalwork of the Heron.



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AIR DEFENCE.

A lecture was delivered at the Royal United Service Institution recently by Group Captain W. F. MacNeece, C.B.E., D.S.O., D.F.C., R.A.F., on "Certain Aspects of Air Defence." Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., was in the Chair.

The lecture was divided roughly into three parts. The first consisted of a few general points of special interest. The second part described certain details of the actual forces and composition of the Air Defence scheme. The third part consisted of conclusions and deductions.

The Certainty of Invasion.

Group Captain MacNeece said that the very term "Air Defence" called up the idea of invasion. There was no Nation in the World so ill-equipped mentally to face the issues of invasion. The absence of real appreciation of the issues of air invasion were due to our almost unconscious mental heritage of freedom from external invasion. The futility of putting new wine into old bottles became increasingly clear as the peaceful years went on. It came as a shock to us to realise that in a few years the sea had changed from our sure defence to our greatest enemy.

[One questions Group Captain MacNeece's premisses. The Spanish Armada, the landing of Monmouth, and William IV, and James and Charles Edward (commonly called the Old and Young Pretenders), and the building of Martello towers and the raising of volunteer regiments to repel Napoleon, rather suggest that we have had some experience of invasions and preparations for invasion in our mental heritage.—C. G. G.]

The sea, he said, could no longer save us from invasion, and it might conceivably starve us. The lecturer said that this statement did not contain a single vestige of a criticism of the Senior Service whose vital function with regard to the safeguarding of our food and commerce remained unchanged.

We must accustom ourselves to regard invasion as a certainty in the event of war with any Continental nation with a large air fleet. The invasion would be a daily and probably a nightly occurrence for a few days in future wars.

Experience has shown that no matter how perfect the mobilisation arrangements of armies might be the first few days after the outbreak of war had nearly always been marked by hostilities on a relatively minor scale. With air action it was otherwise. Pilots and machines would be ready and the greatest raid of the war under way at the pressing of a button.

Objectives.

The other salient difference was even more obvious. The land, sea and air forces of a country had one common end in view but they achieved that end in different ways. The end in view was to supply the necessary means by which their Government could impose its will on that of the enemy. The objective of the Army was to defeat the army of the opposing nation. The objective of the Navy was a similar one in addition to safeguarding vital lines of communication. The objective of the Air Force was to paralyse in every way possible the enemy's power and will to war. As far as could be foreseen main air effort would be against centres of vital importance, such as the seat of Government, railway stations, etc. Bombs dropped on warlike objectives would be so widely dispersed as to be a continuous menace to the whole population.

Having seen that air invasion differed from land attack in that it might be expected to reach its maximum intensity at the very outbreak of war it would be apposite to quote the dictum of Marshal Foch whose unique position enabled him to gain the broadest grasp of the aspects of modern war and whose statement on the subject had never been seriously controverted :—

"The potentialities of aircraft attack on a large scale are almost incalculable, but it is clear that such attack, owing to its crushing moral effect on a nation, may impress public opinion to the point of disarming the Government and thus become decisive."

The Defence Scheme.

Approaching the second part of his lecture Group Captain MacNeece said that in considering the actual scheme of air defence he was compelled to be most guarded in imparting information which might be considered of a secret nature.

He reminded his audience that at the end of the War 1914-18 we had 200 Service Squadrons abroad and the equivalent of 199 Squadrons at home for training and reserve purposes. Within two years of the armistice we had fallen to 28 Squadrons only one of which was available for home defence.

In framing the Home Defence scheme the Air Ministry had decided to submit a programme which would insure that the forces to be provided should be sufficiently strong to afford adequate protection against the largest air force within striking distance of our shores.

This process of expansion was now in full swing and should be complete by the end of 1929.

Of the 52 Squadrons allotted for Home Defence a certain number would be earmarked for purely defensive purposes, i.e., for attacking enemy aircraft on their raids. The other part of the force would be offensive squadrons which would be directed to seek out enemy objectives the destruction of which would most paralyse him in the conduct of the war.

With regard to the first type, these would normally consist of small machines with a very high performance. They would occupy a zone some 30 miles from the southern and eastern coasts. The reason which had necessitated a location somewhat in the rear of the more obvious position on the coast line was that it was useless to take up a military position which combines every other military advantage except that the enemy need not encounter it in order to attain their objective.

We might expect the enemy to come over at any height up to 25,000 feet. We must count on London as being probably the main objective and we could not count on more than 30 or 40 minutes' warning. An elementary mathematical problem would accordingly show the necessity for locating fighter squadrons well back from the coast. Other fighter squadrons would be thrown well forward and it was hoped that by their specialised training they would be able to carry out valuable duties such as breaking up enemy formations and giving early and reliable information to the main defences in the rear.

It was most fully recognised that the offensive handling of our defensive measures was in the highest degree essential.

The Lecturer pointed out that while it was not permissible to give the exact number of squadrons earmarked for bombing purposes it was safe to say that they were considerably in excess of the fighter squadrons. The bombing squadrons would be grouped in three main divisions for administrative purposes. It was necessary that the aerodromes for this purpose must be topographically suitable and they must not be too much exposed to enemy attack.

A question which was likely to be asked was "Why are not all squadrons earmarked for the rôle of defence." It was only too easy to show where this impracticability lies.

The battle zone of the air might be said to stretch up to 30,000 feet. This might be divided up into 60 separate zones of 500 feet each. This parallel served to bring home in a very trenchant way the enormous and almost incomprehensible basis difference between manœuvres in the air and on the ground. Taking into consideration the cloudy weather and partial mists which prevailed in this country for the majority of the days of the year the position was even more involved.

While he hoped that our fighter squadrons would be so trained and that scientific appliances would be so improved as to increase the chances of contact being obtained, Group Captain MacNeece said that it was impossible to deny that on a considerable number of occasions when the climatic conditions were favourable to concealed advance, the enemy bombers would occasionally be able to elude the vigilance of the defenders. He mentioned this point merely to emphasise that air warfare is like all other forms of warfare in that it confers an enormous advantage to the offensive.

The future of air strategy was admittedly undecided but any scheme of air defence which provided in the main for the defensive action as opposed to offensive action would be absolutely foredoomed to failure.

Ground Organisation.

Dealing with ground organisation the Lecturer said that this might be divided into four categories, (a) Anti-Aircraft provided by the Royal Artillery, (b) Searchlights provided by the Royal Engineers, (c) Acoustic and scientific developments generally provided by Military and Civilian experts, and (d) The observation system for transmission of information.

In addition to direct hits on enemy aircraft the guns were of great value in forcing bombing aircraft to fly at a greater altitude and in generally disturbing their accuracy. The rôle of the searchlights was to discover and illuminate the attacking bombers and expose them as targets. With regard to scientific developments generally and the system for centralising and colating information it was impossible to go into details but the results obtained were of a most interesting and secret nature.

In conclusion Group Captain MacNeece said that no matter what were the defensive arrangements there could be no guarantee of immunity from air attack.

In future wars there would not be anything so definite as a supremacy of the air but we must hope to win a superiority of the air. A real scheme of air defence was not a mere selfish national consideration, it was the strongest link in the great and delicate chain of Empire.

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27/60 h.p. A.D.C. "CIRRUS" ENGINE.

The 27/60 h.p. A.D.C. "CIRRUS" Engine was the first British Low Powered Aero Engine to pass the Air Ministry 100 hrs. Type Test, and has been adopted for use in the De Havilland "Moths," with which the Light Aeroplane Clubs are equipped.

The following opinions of "CIRRUS" owners after some months' running should be of interest:

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21st December, 1925.

Extract.

"I am sure that you have done extremely well in achieving in such a remarkably short time, the production of an engine which to-day is giving literally no trouble at all."

"There is no doubt that the engine is behaving like one with years of development behind it."

London Aeroplane Club,
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London, W.1.

17th December, 1925.

"I enclose a table showing the flying carried out by the London Aeroplane Club from the 19th August to the 30th November on the two D.H. MOTHS fitted with 27/60 h.p. CIRRUS engines."

"From this table you will see that flying was carried out on 72 days and that 729 flights were made resulting in a total flying time of 298 hours 45 minutes."

"We are extremely satisfied with the performance of the two CIRRUS engines supplied by you in the D.H. MOTHS. The only trouble we have experienced with these engines is with the valve seatings, but the modification you made has entirely corrected it."

"I trust that you will find these figures of interest."

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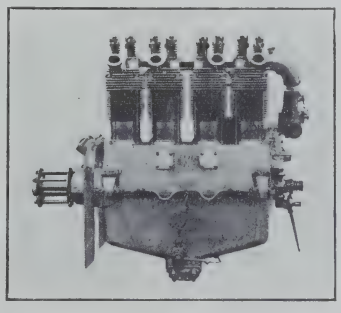
25th November, 1925.

Extract.

"The Cirrus engines fitted to the Machines have proved exceptionally reliable and economical.

The only replacements necessary on the two engines have been two new Cylinder Heads, the Valve Seatings of which were found by the representative of the A.D.C. Aircraft Ltd., when carrying out a modification, to have moved an almost inappreciable amount in the Cylinder Heads. The particular engine in which this very slight defect, which was not noticeable in running, was found had done 49.5 flying hours and 58 hours' total running.

No other replacements whatsoever have been necessary on either engine, although over 100 hrs.' flying has been done."



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AMERICAN MUNIFICENCE.

Mr. Daniel Guggenheim, a financier and director of the Guaranty Trust Co. of New York, has informed the U.S. Secretary of Commerce that he has already set aside $500,000 and is ready to supply an additional $2,000,000 to assist aeronautics until freight and passenger-carrying services in the United States are self-supporting.

The new offer of money, which amounts to approximately £500,000, is to promote aeronautical education in institutions of learning and among the public to assist in the development of commercial aircraft and equipment and the further application of aircraft in business, industry and other social and economic activities of the nation.

Last summer Mr. Guggenheim gave $500,000 to the New York University for the establishment of a Chair of Aeronautics.

THE THREE-ENGINED FOKKER AT McCOOK FIELD.

By invitation of the Chief of the U.S. Army Air Service the Fokker F.VII 3m. (three 200 h.p. Wright Whirlwind engines) which performed so well in the Ford Reliability Tour has been submitted for test at the Experimental Division of the Army Air Service at McCook Field, Dayton, Ohio.

The results of the tests were very satisfactory and a brief summary of the results is given hereafter.

Two series of tests were made, one with a useful load of 2,975 lbs., and the other with 4,000 lbs.

In the tests carrying 2,975 lbs., of which 1,315 lbs. constitute a paying load, the rate of climb from the ground was 860 feet per minute, 5,000 feet being reached in 6.9 minutes and 10,000 feet in 17.5 minutes. The ceiling, or maximum altitude obtainable with this load was nearly 17,000 feet, and the service ceiling, or the altitude at which the rate of climb is 100 feet per minute, was 15,000 feet, which was reached in 42 minutes. All these figures relate to tests with all three engines in operation.

On two engines, and at an altitude of 8,000 feet, the rate of climb was 300 feet per minute, thus assuring an ample reserve of power at this altitude with one engine stopped. 8,000 feet is the greatest height which it is necessary to reach on any air route in the United States.

It was further determined that the F. VII 3m. could be flown with the load on one engine only and that horizontal flight was maintained at about 450 feet altitude.

With a load of 4,000 lbs. the climb at sea level was 720 feet per minute, 5,000 feet was reached in 8.6 minutes, 10,000 feet in 24.2 minutes, with a service ceiling of 12,000 feet.

On two engines the rate of climb at sea level was 343 feet per minute, thus ensuring a take-off with this heavy load on two engines only. A service ceiling of 5,000 feet was reached in 24½ minutes on two engines.

Over the speed course, and carrying 4,000 lbs. load, the machine gave 117 m.p.h. Considering the fact that the airscrews used were designed to give the best efficiency at a cruising speed of 100 m.p.h., and that the tests were carried out in cross winds and rough air and at only 1,755 r.p.m. instead of 1,850 normal r.p.m., it is believed that a speed of 125 m.p.h. could be obtained under normal conditions.

According to the official report, "the airplane returns to a normal level position when left to itself in a side-slip or glide," and that "there is no tendency to spin at stalling point or with abrupt use of the controls. It retains controllability at the stalling point In a glide it is possible to change direction by the use of the rudder only. A sudden shut-off of one of the side engines effects only a slow change of direction which is very easily checked by a slight movement of the rudder. The adjustable fin has not been used and its adoption is not considered necessary The rudder and elevators are effective during low speeds and stalls and in banks and side-slips. The rudder is effective in a skid The ailerons are easy to move at both high and low speeds. The airplane responds readily to the ailerons at all speeds."

All test pilots who flew the machine were generous in their praise regarding its performance and the engineering criticisms were of such minor nature as to be practically insignificant.

AVIATION IN LITHUANIA.

A Memel firm, of the name of Lindenau and Co., have recently undertaken the design and construction of aircraft, and a new company, recently registered under the name of the Memel Aviation Co. Ltd., has been formed. The general manager is Herr Lindenau and the chief engineer Herr F. H. Hentzen, the well-known German engineer and glider pilot, who has had considerable experience in the construction of all types of aircraft. Under his direction one German foreman and sixteen local workmen have turned out in three months the first privately-built aeroplane in Lithuania.

This machine is a two-seater reconnaissance aircraft and is fitted with a 450 h.p. Napier Lion engine. With the exception of the engine the entire machine has been built of local material. The fuselage and wings are covered with birch plywood and the engine is mounted on a steel framework. The machine weighs 1,700 lbs., has a maximum speed of 250 km.p.h., a climb to 5,000 m. in 17 minutes, with a ceiling of 8,000 metres.

Lindenau and Co. have purchased a sporting aeroplane fitted with a 75/80 h.p. engine and this machine, together with the new two-seater, are stored at Rumpiskis aerodrome.

During the Agricultural Exhibition, which was held at Kaunas (Kovno) during 1925, an air service was established between Memel and Kaunas, but only about four flights were made owing to the dearth of passengers.

The Koenigsberg-Helsingfors service, operated by Junkers (Europa Union) operates via Memel, Riga and Reval. The Memel aerodrome is situated at Rumpiskis and is equipped with sheds and the necessary equipment. This aerodrome is also used by the Lithuanian Army Air Service. The Koenigsberg-Helsingfors service only operates during the summer months and during the period Apr. 20-Oct. 30, 1925, 3,504 passengers were carried in 1,430 flights, only five of which were interrupted by bad weather. The total distance covered in these 1,430 flights, was 243,037 kms. in 1,857 flying hours. Freight carried includes: 26,290.5 kgs. of personal luggage, 7,989.59 kgs. of general freight, 304.765 kgs. of mail, 2,064.885 kgs. of parcels, and 2,105.208 kgs. of newspapers. The percentage of reliability of this route amounted to 96.1, which can be considered as being very satisfactory.

JAPANESE NOTES.

On June 30, 1925, the tests of all-metal military seaplanes of Japanese manufacture were concluded at Kasumigaura Naval Air Station. The following types passed all tests: (i) Kawasaki-Dornier Comet (two 360 h.p. Rolls-Royce engines), (ii) Mitsubishi (300 h.p. Hispano-Suiza engine), and (iii) Nakajima-Breguet XIX (400 h.p. Lorraine-Dietrich engine).

On July 15 Capt. Shiro and Lieut. Maeda, of the Naval Air Service, flying two Mitsubishi "1924" type biplanes (300 h.p. Hispano-Suiza engines) and accompanied by two passengers, flew from Kasumigaura to Ohmura, 1,140 miles, in 17 hours 35 mins. without a stop.

On July 19 two Salmson biplanes of the 4th Air Regiment, Army Air Service, flew from Tachiarai (Kyushu) to Asahigawa (Yezo), the length of the Japanese Archipelago, a distance of 1,000 miles.

On Aug. 3, two F.5 flying boats (two 360 h.p. Rolls-Royce engines each) flew from Sasebo to Chingai, in Korea, crossing the Chosen Straits between Japan and Korea, by night.

On Aug. 5, a formation of six Mitsubishi "1924" type fighters of the Naval Air Service flew from Kasumigaura to Miyakejima and back, without a stop, a distance of over 300 miles.

Also on Aug. 5, the first Army Aerial Pageant was held at Tokorozawa Army Aerodrome, over 100 aeroplanes taking part.

AIR WARFARE.

The following letter has been received:—

Sir,—Poor Berkeley: there he goes, like the White Knight, right on his head as usual!

In your issue of Jan. 13 he quotes himself on high flying protective escorts for bombing machines. He omits to quote two words which, in the original, qualify the whole passage. These words are: "BY NIGHT."

The idea of providing low-flying bombers with high-flying escorts at night is good. But unless Berkeley intends that his bombers should be illuminated (which would look awfully pretty) his scheme suffers from one disadvantage. It is impossible.

I expect Berkeley will want a period of convalescence after that bump. Even if he continues his equestrian essays I cannot go on putting him back on his horse; he falls off too often.

But it would be a pity if, as a result of my ceasing to instruct him, Berkeley was unable to satisfy his manifest desire to learn something about air fighting. It gives me, therefore, the keenest pleasure now to indicate to him a source of detailed information upon that subject I refer to a volume published by Longmans at 6s. and entitled: "The Strategy and Tactics of Air Fighting."

(Signed) Oliver Stewart.

[In justice to Berkeley, whose time is better occupied than in replying to letters, one refrains from asking him to answer Major Stewart. As the whole argument has reference to night-bombing there was no need to include the words "by night." Major Stewart's knowledge of war is seemingly limited to service as a subordinate during the disturbance 1914-18, and apparently his ideas have not advanced since that affair. Maurice Baring has said "we approach each war as a novice," or words to that effect. Major Stewart is apparently prepared to enter the next war just as much a novice as he was when he entered the last. There is every reason why in the next war night bombers should have the performance of a Fairey Fox and should be accompanied by high-performance fighting escorts. So far from such a scheme being impossible it will prove to be an ordinary necessity. Major Stewart is welcome to the advertisement which he gives to his own book, which has at any rate the merit of being amusing reading, even if it cannot be regarded as a serious contribution to military literature.—C. G. G.]

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THE ECONOMICS OF AIR TRANSPORT.—III.

By W. H. Sayers.

From the general fact that any given air line's total costs can be regarded as made up of an annual charge fixed by the equipment belonging to the line, plus a series of costs which depend on the actual work carried out by the equipment, it is obvious that the total cost per unit of flying accomplished depends to a large extent upon the amount of that flying.

For no flying, the cost per mile or ton mile flown is infinite, for the fixed costs have to be divided by zero to give the costs per mile. At the other extreme, for an infinite amount of flying, the fixed costs per mile flown become infinitesimal per mile flown. These fixed costs steadily decrease per unit of flying in inverse proportion to the amount of flying.

Thus for a very small use of a given fleet and equipment the standing or fixed costs form a very large proportion of the total costs per ton mile, and the variable or running costs are relatively unimportant. As the amount of flying performed by that particular fleet increases, the cost per ton mile more and more closely approximates in value to the running cost figure alone.

The Variation of Cost with Traffic.

To return to Fig. 2, which illustrates an actual case, it will be seen that when 15,765 miles are flown per month, fixed or standing charges account for 100, and running costs for only 25 of a total cost of 125 in the units there used. These figures are the monthly averages of the whole period for which data is available in this case. If instead of the average month, the month of maximum flying (August, point No. 11) is taken, it will be found that for 32,500 odd miles per month fixed charges remain at 100 and running costs have increased to 52. The cost per mile flown has fallen from $\frac{125}{15,765} = .0079$ for the average month to $\frac{152}{32,500} = .0047$ for the busiest month.

This represents a case where the fixed costs bear an unduly high proportion to the running costs. There is no difficulty in explaining this fact. The mileage of the average month—15,765—represents a daily average of about 530 miles per day, divided amongst four machines, or 132.5 mile per machine per day. Assuming the cruising speed to be 85 m.p.h., this is little more than 1⅗ hours' flying per machine per day. The busiest month represents about three hours' work per machine per day. In other words, the equipment of the concern was not being used to anything like its full capacity, and under these conditions, standing charges inevitably assume very great importance. It may be said that from the internal evidence of the original data, these costs relate to conditions which obtained some years ago, on one of the British Continental services, and that there is reason to suppose that to-day, Imperial Airways, for instance, has actually secured a much better utilisation of its equipment and that consequently standing charges are a lesser proportion of total costs than they appear to have been in this instance.

An Assumed Case.

No precise data as to this latter concern's costs have yet been published. Sir Sefton Brancker has recently given the figures of 2s. for overhead, and 3s. for running costs for a particular class of machine. It is obvious from what has been said already that this figure for overhead charges can only apply to a given set of circumstances, and the circumstances which are most likely to have been in the speaker's mind were those of Imperial Airways during 1924-25.

There is some considerable room for doubt as to the basis on which Sir Sefton Brancker's figures have been divided into overhead and running costs. Standing costs as they are shown by a graphic analysis of total costs on the basis here suggested are usually larger than the "overhead" costs as understood by an accountant, and running costs as usually computed are greater than the extra rate of expenditure which a cost curve shows as proportional to output. But if Sir Sefton Brancker's figures are accepted as showing roughly the fixed and the variable costs of an undertaking similar to Imperial Airways working under the conditions of 1924-25, an approximate cost curve for these conditions can very easily be made.

The total flying of Imperial Airways in that period can be represented as approximately equivalent to 750,000 ton miles per annum. At 2s. per ton mile fixed charges are therefore £75,000 per annum. At 3s. per ton mile, running costs are £112,500 for 750,000 ton miles. If on Fig. 3 a straight line is drawn from the point representing £75,000 per annum for zero ton miles, through that representing £(112,500 + 75,000) = £187,500 for 750,000 ton miles, and produced a cost curve for these supposed conditions of the type which has been assumed, will result. This curve is of more interest as showing very approximately the nature of the conditions obtaining on the existing Continental lines than as an effort to pierce the inner secrets of Imperial Airways. It becomes even more illustrative if it is converted into a curve of cost per ton mile, by dividing the total cost as shown by the line by the ton miles at corresponding points.

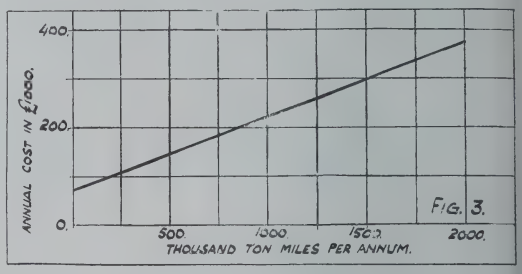


Fig. 3.

A Cost Curve in a New Form.

Such a curve is given in Fig. 4 for this case. It shows—as it obviously must—a total cost of 5s. per ton mile at 750,000 ton miles per annum, but a different cost at any other traffic figure. For less than this amount of flying the cost per ton mile increases—and that very rapidly. For more flying the cost per ton mile decreases.

The decrease for more flying is at a less rate than the increase for less flying, but the curve shows that there is still the possibility of very markedly decreasing the cost per ton mile of capacity flown, by increasing the amount of work done by the equipment in service without any improvement in the technical and mechanical efficiency of that equipment. For double the amount of flying—1,500,000 ton miles per annum—the total cost would automatically fall to 4s. per ton mile—a reduction of 20 per cent.

Under the conditions assumed the running costs are more than half the total costs, and are therefore of very distinct importance. This is due to the fact that the traffic—or rather the amount of flying—is substantial. Were this same fleet and organisation used to provide a service of half the intensity (375,000 ton miles per annum), the position would be reversed. The standing costs would become 4s. per ton mile, leaving running costs at 3s.

The Overwhelming Importance of Traffic.

It will therefore be obvious that it is practically impossible to make any useful study of the costs of an air line, or to attempt to settle the details of the equipment and organisation which shall be employed for a given service, unless, as a preliminary step, the volume of traffic which is, or will be, handled, or alternatively, the service to be given, or which it is desired to give, is first determined.

For if the traffic, and, consequently, the service, is small, standing costs will be the predominant factor in the total cost of providing the service, and the running cost of the machines and so forth will be relatively unimportant. In such a case a machine of high running cost may be tolerated, provided that its use permits of cutting down standing charges. If the traffic is large, and the service dense, standing charges become a minor factor, but high running costs cannot be tolerated.

For the majority of cases of air lines either now existing or likely to come into existence in the near future, the standing charges are the predominant factor of cost. It might be supposed from the figures quoted from Sir Sefton Brancker that on some of the busiest air routes now in operation this condition has been passed, and running costs were now the factor of greatest importance. This is really only true in virtue of the artificial conditions under which these services operate. Imperial Airways in fact is subsidised to an extent considerably greater than is revealed by the cash subsidy which is paid to it. It operates with the assistance of a number of State-provided facilities, in the form of aerodromes, meteorological services, and the like, and it most certainly does not defray the whole cost of these facilities. If it had to provide all the facilities itself, and to pay for them, a very considerable increase in the standing charges would result.

Traffic and Traffic Capacity.

It has been shown that essentially the cost of an air line depend on the service given by that line—in other words, that the costs can be low only if the concern's equipment is used up to its full capacity. This is fairly obvious. Col Searle's oft-repeated statement, that the way to make an air service pay was to keep its aeroplanes flying as hard as possible, is the practical expression of this fact.

But it is of no use to fly a lot if the flying does not bring in enough revenue to pay for it. For a given air line, the cost

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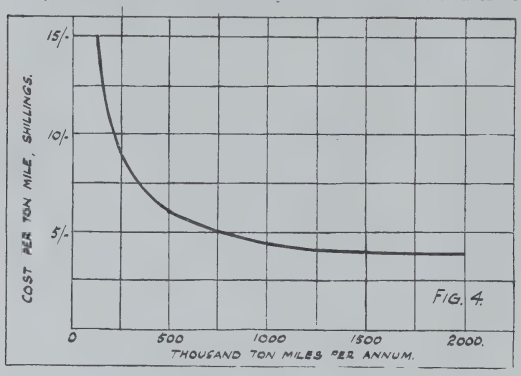
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per ton mile of capacity flown falls with increasing ton miles per annum. But the total cost does not fall. If you can attract no paying traffic you will lose the minimum amount possible by not flying at all. Your loss will then be your annual standing charges. Every mile flown will involve an extra loss in the form of running charges, and it is obviously not economical commercially to run a service of an intensity or frequency, which is not warranted by the paying traffic which it will attract.

This is the essential difficulty—not only of air lines—but of practically all new transport services. A large, and, therefore, a lucrative traffic can only be obtained if the fares—or



rates—are low enough to be attractive, and if the service itself is adequate to carry it. A very restricted service cannot carry a large volume of traffic, and with such a service, fares—to be remunerative—must be high. On the other hand a very heavy service, though it will decrease the cost per ton mile of capacity, will lead to a heavy loss if the traffic to justify it does not materialise.

LOAD FACTOR.

The traffic actually carried by Imperial Airways in 1924-25 amounted approximately to 345,000 ton miles, as against a capacity of 750,000 ton miles. On an average, therefore, each machine carried only $\frac{345}{750}$ =46 per cent. of its full load. This ratio between traffic carried and the capacity of the service—which is usually termed the load factor of the service—is a factor of very great importance in transport economics. The cost of running a given service depends almost entirely upon the service alone. The price which must be charged in the form of fares or rates to cover these costs, however, depends not only upon the service itself but upon this load factor.

If the cost of the service is 5s. per ton mile of capacity, but the traffic carried represents only one half of the capacity of the service, the cost per unit of traffic is obviously twice the cost per unit of capacity—or in this case, 10s. per ton mile.

Thus, assuming that this figure (5s. per ton mile) for cost applied to Imperial Airways in the particular year, the cost per ton mile of traffic would be $\frac{5/-}{\cdot 46}$ or about 10s. 9d. per ton mile—which is about 1s. per passenger mile, and represents a minimum remunerative fare of £12 per passenger, London-Paris. Could the same traffic have been carried with a service of 345,000 ton miles capacity—that is with all machines fully loaded—the curve of Fig. 4 shows that the cost per ton mile of capacity would have risen from 5s. to about 7s. 5d. But the cost per ton mile of traffic would now be equal to the cost per ton mile of capacity—or 7s. 5d., instead of 10s. 9d. of the actual case. This would have been covered by a fare of £8 10s. per head, London to Paris.

If the traffic could have been increased to give 100 per cent. load factor for the service actually given, that is, if 750,000 ton miles of traffic could have been secured, the cost would have been 5s. per ton mile carried.

For a fixed volume of traffic minimum costs are obtained when the service just carries that traffic when fully loaded. But that minimum may be higher than the unit cost of a larger volume of traffic, caried at a load factor less than 100 per cent.

In the example of Figs. 3 and 4, the minimum possible cost for a traffic of 345,000 ton miles per annum is 7s. 5d. per ton mile. A service of 750,000 ton miles capacity per annum costs only 5s. per unit of capacity, and with this service the cost per unit of traffic will also be 7s. 5d. per ton mile, if the load factor is $\frac{5/-}{7/5}$ or 67.5 per cent. This would mean carrying 750,000 × .675, or 506,000 ton miles per annum. Therefore any amount in excess of this could be carried at a cheaper rate than 345,000 ton miles can possibly be carried.

AN OLD FRIEND.

Many people in the Aircraft Industry will remember the name of W. D. Oddy who used to make particularly good wooden airscrews in Leeds during the War. When Peace broke out and all aircraft orders were cancelled Mr. Oddy's firm closed down and he himself went out of the aircraft business. Recently he has gone into partnership with Mr. E. Bennett, and has formed the O.B. Engineering Co. Ltd., of 95, Hunslet Lane, Leeds, and he would be glad to hear of anybody in the Aircraft Industry who wants general engineering work done.

The firm's speciality is precision work of any description, including internal and external grinding up to three feet long by twelve inches diameter. They also specialise on tool and jig work. In addition they are prepared to do repetition work in any quantities suitable for capstan and turret lathes. In this direction they have a special lathe for the manufacture of duralumin control pulleys of which they have made several thousands for one firm in the Aircraft Industry. And one believes that their prices are distinctly on the right side for this class of work.

The O.B. Engineering Co. Ltd. also makes special machines for particular work. For example, at present they are building a machine for the clothing trade and another for the confectionery trade, so evidently they are not short of ideas. As Mr. Oddy himself puts it in a personal letter, "If you know of anything the Aircraft Industry is requiring and is having difficulty in getting, either through manufacturing troubles or for want of ideas, we should be glad to hear about it, as we might be of service."

THE GERMAN AIR TRANSPORT AMALGAMATION.

The formal amalgamation of the two German air traffic companies, the Deutscher Aero Lloyd and Junkers, has been completed with the formation of a new company, to be known as the Deutsche Lufthansa A.G.

This company will not begin operations before Apr. 1.

A great deal depends on the deliberations of the International Conference now discussing the German aircraft limitations in the light of Locarno, and also on the negotiations with the various public authorities and the provinical and neighbouring air line companies.

It is not intended to form a monopolistic company controlling the whole of German civil aviation. The various provincial air lines will retain their separate identities in order to sustain local interest and will only be connected with the central company much in the same way as some of them were connected with the two old companies.

The Reich will apparently have a share in the new company, but the controlling share will be retained by the old companies.

In the same way the Federal States will retain their interest as before, but this will be with smaller companies in which they are directly interested and not with the central organisation. All these relationships are proving difficult of negotiation and present plans may have to be modified considerably before the Deutsche Lufthansa reaches its final form.

In the meantime preparations for the opening are being made in so far as air lines are concerned, but naturally these are being hindered until something definite is decided at the Paris negotiations on German limitations.

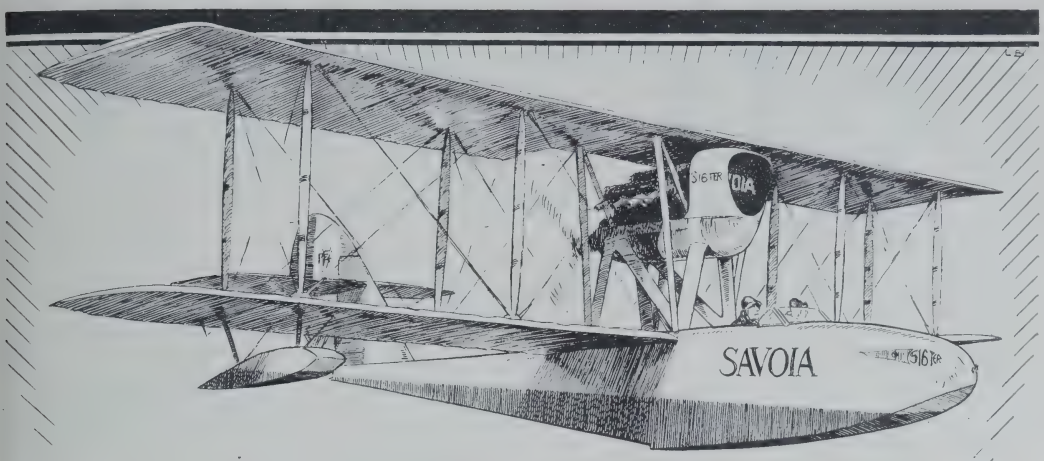
At the present only main lines are worked out provisionally on a basis which eliminates the competition under the old régime and on a system that will permit of rapid expansion into and over the neighbouring countries when such is permitted.

The executive board of the new company consists of:—Herr Merkel and Herr Wronsky, formerly directors of the Deutsche Aero Lloyd, and Herr Milch, formerly director of the Junkers Company.

The annual report of the Junkers Co. from Jan. 1, 1925, to the end of November, the date of closing down preparatory to the amalgamation, has just been published. Between those dates this company made 30,000 flights and carried 80,000 passengers, 370 tons of goods and 250 tons of mail. The distance flown represents a total of 2,800,000 miles. During this period only one passenger was seriously injured and five slightly injured.

THE BELGIAN AERO CLUB ANNIVERSARY.

On Saturday, Jan. 9, the 25th Anniversary of the Belgian Aero Club was commemorated at Brussels in the presence of the King and Queen of the Belgians. Sir Sefton Brancker was present as the representative of Great Britain.



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THE FLIGHT TOWARDS THE CAPE.

Mr. Alan J. Cobham, Mr. A. B. Elliott and Mr. Emmott, arrived at Kisumu on Wednesday, Jan. 13. They intended to leave for Tabora on Friday, Jan. 15.

In a dispatch to *The Daily Mail*, Mr. Cobham says that the natives have named him "The Great Master of the Bird."

And so it has been left to uneducated natives of Central Africa to find the *mot juste* for Mr. Cobham. In view of his well-known ways with and his various receptions of the said birds, the name is very apposite.

The party arrived at Tabora on Monday.

As Mr. Cobham is now approaching the ostrich country an adventure with an ostrich is expected at any moment, in the absence of eagles.

The following letter from Mr. Cobham to THE AEROPLANE, sent from Malakal on Jan. 1, is of considerable interest:—

You will see by the right hand corner that I am starting the New Year well, by writing to you.

To-morrow we shall fly on over the Sud swamp area to Mongalla. This flight will be of great interest to the Irrigation Dept. here also the Survey Dept. who have asked us to take a series of photographs, in order to give them an idea of certain parts of the country that they are not certain about. From an aviation point of view, the flight from here to Mongalla will be a good opportunity of finding out how difficult it is or otherwise to find one's way over the Sud and whether or not seaplanes could get down O.K. or not.

Up to the present the D.H. and the Jaguar combination is doing very well and hopping off the ground like a scout.

Once we leave Mongalla I think my supplies will be ahead of us. However, we are really making it a flight of survey out to the Cape and the return trip may be a dash one—who knows.

Undoubtedly the opportunities of running air lines between Cairo and Kenya Colony are very good from a practical point of view so far, and even in the wet season with seaplanes the service could be maintained with absolute regularity.

As far as I can judge, nearly all the great commercial air routes up to the present are really seaplane jobs, *i.e.*, there are so many useful air routes that would be perfectly safe every moment the machine was in the air, if it were a seaplane. And I think that this fact should be borne in mind by the manufacturer.

There are so many parts of the World where it would be as safe to fly over the land in a seaplane as an aeroplane, such as vast forest and swamps, etc. If I had time I could mention a dozen fine commercial air routes, but they would all be seaplane jobs.

A CAMEO OF THE LONDON TO CAPE TOWN FLIGHT.

By A. B. ELLIOTT.

[*This interesting account of an incident of the London-Cape Town flight has been received from Mr. A. B. Elliott, who is engineer-in-charge of Mr. Cobham's machinery. Mr. Elliott was responsible for taking the Puma to Burma and back last year without trouble, and very great credit is due to him for surmounting the difficulties encountered in the early stages of the present flight. From this it will be seen that Mr. Elliott is as skilled with the pen as he is with the spanner.*—ED.]

Two hours have passed and at 4,000 feet we fly along with a fair following wind helping us towards Malakal, our next port of call.

Khartoum has faded away in the vista of the desert and we are following the Blue Nile, winding below us like a shimmering snake over a parched desert.

Inland each side of the water a few scattered palms fade away into an endless stretch of sand and a perfect sky.

In the cabin the photographer doses with his head on the petrol tank, the Engineer heaves a sigh, looks at his watch and mutters, "Three more blooming hours," and proceeds to work the petrol pump. Presently the roar of the engine lessens, and a voice from the pilot's cockpit shouts along the communication channel, "Get ready for the Dam."

Feverish movements follow with the cinema camera and the Engineer opens and focusses other cameras.

We are much lower now and the heat is terrific—Engineer wonders how much higher the oil temperature will go and the Photographer prepares to traverse the Sennar Dam, the latest British engineering triumph in the Sudan.

A voice from the cockpit bellows—"All right?"

"No, closer!" comes the reply.

We side-slip and several feet of film pass the lens.

The engine roars, we bank and climb, and luggage falls over on the Engineer.

It is the Engineer's turn with the camera on the other side.

We glide,—and from the cockpit comes the query, "Got it?"

"No, not yet, too much wing."

Again the question, "Got it?" "Yes!" roars back the Engineer.

Then, "Wait a minute, I'll give you another."

A little manœuvring, and the Engineer clicks the shutter again. "Just one more." "Can't," replies Engineer, "no more film!"

The engine roars, we soar again. Gee, it's hot to-day!!

The Dam fades away, those in the cabin sort themselves out, the Engineer is sitting on his sun helmet and the Photographer has lost his camera handle.

A few minutes' work to change the film and to check up the cine film used, and we settle down.

We are back at 4,000, flying steadily, and half an hour later we are over the desert heading for the White Nile.

The Photographer doses. Engineer works the pump, puts his feet out of the window, looks at his watch, and mutters, "Two more blooming hours."

AVIATION IN CENTRAL AMERICA.

For some considerable time the U.S. Government have supplied the Nicaraguan Government with a number of aircraft and some pilots for the purpose of keeping public order throughout the Republic, particularly in the region of the Panama Canal. A number of military and naval personnel are always stationed in Managua, the capital, for public protection owing to the frequency of minor revolutions.

The U.S. Army Air Service stationed in the Canal Zone regularly make Managua one of their halting stations when flying over the Republic. This peaceful invasion has ultimately put a stop to the disturbances that previously were of persistent regularity.

In Costa Rica, through the initiative of the American Minister, arrangements have been made for military aircraft stationed in the Canal Zone to carry mails between San Jose and Port Limon until repairs have been made to the railway communications. This courtesy has been greatly appreciated by the Costa Rican Government and the public in general.

There is no civil aviation in Costa Rica. Any aircraft operating over Costa Rican soil are either American or Mexican. The U.S. Army Air Service often make use of San Jose as one of their halts in their Panama, Cuba, Key West and Florida air routes for the relieving of air units and for the Army and Navy air manœuvres.

The U.S. Navy have made an allotment of $253,400 for the construction of an enlarged naval air base at Coco Solo in the Canal Zone. It is stated in the Central American Press that a new town will spring up there in the next two years. Public opinion in the various Central and South American Republics views this new activity as a means of protection against foreign invaders.—H. G.-C.



A BIG DAM.—A photograph taken by Mr. A. B. Elliott (engineer to Mr. Cobham) of the Assuan Dam, which was passed in the course of the flight towards the Cape in the De Havilland 50J.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

The fog during the week has curtailed the flying and with only one machine available the flying time was 7 hrs. 55 mins.

The following members had flying instruction: R. C. Brighton, R. L. Preston, Mrs. Atkey, R. V. Banks, W. Hay, G. Wallcousins, G. Quirk, D. Kittell, N. Jones, A. P. Hunt, V. H. Doree, A. R. Ogston.

Solo flights were made by Mrs. Eliott-Lynn, G. N. Warwick, and G. H. Craig.

The accident to G-EBLU has turned out a serious matter as it means practically a complete write-off of the aeroplane. Immediate steps are being taken to replace the machine.

[A dance was organised by some members of the Club at the Suffolk Galleries on Wednesday, Jan. 13, with the idea of raising funds to "improve the amenities of the aerodrome." One is informed that the dance was a success. The financial results will be published if and when the figures are made known.]

The Lancashire Aero Club.

Flying took place on Wednesday, Friday, Saturday and Sunday. Except for Wednesday hard frost and mist have prevailed.

Mr. Cantrill and Mr. Scholes gave dual instruction to H. Hardy (1 hr. 45 mins.), A. Goodyear (35 mins.), W. Colley (1 hr. 5 mins.), D. Tummers (35 mins.), H. Stern (35 mins.), P. Michelson (20 mins.), A. Parker (35 mins.), J. Leeming (1 hr. 5 mins.), S. Crabtree (40 mins.), R. Williams (25 mins.), M. Lacayo (35 mins.).

Solo flights of 45 mins. by J. Cantrill.

Total, dual 8 hrs. 15 mins. Tests occupied 45 mins. Total time flown 9 hrs. 45 mins.

The enthusiasts who use the L.P.W. will be glad to hear that a new engine has arrived and is to be fitted shortly. This will drive the "Prop" direct without gearing. It is proposed to raise the engine and to take four inches off the height of the front skid; at present the skid is inclined to "dig in" if the tail is too high.

The Optimists predict that the new engine will be easy to start, and Mr. Dyson is confident of higher speeds—even uphill.

The Newcastle-upon-Tyne Aero Club.

Report for week ending Sunday, Jan. 17:—The weather has been unfavourable throughout the week, with snow, and for almost every day. No flying was possible on Tuesday or Thursday.

On Wednesday both Mr. W. M. MacKay and Mr. W. T. Walton carried out the figure of eight tests for their Licences, each flying for half-an-hour, but there was never any possibility of their attempting the height tests on account of bad visibility.

On the same day, "L.Y.," *Bernicia*, proceeded to her birthplace, Stag Lane, per the Tyne-Tees steamer, *Bernicia*. The latter looked more stately than ever as she proceeded down the river, and appeared to be inwardly rather proud of her part in, for a time, removing her rival in the transport business from the district.

Mrs. R. N. Thompson and Mrs. J. A. Somerville (honorary members) each had 15 mins.' flights with Major Packman on Saturday and on Monday Miss Parkin had a 7 mins.' joy-ride.

Mr. P. Forsyth Heppell took Mr. F. C. Bulman for a 39 mins.' flight on Saturday. Mr. R. N. Thompson had a 30 mins.' solo flight.

On Sunday Mr. N. S. Todd flew for half-an-hour with Mr. G. H. Twine as passenger Mr. Twine had expressed a wish to have a real joy-ride, as, during his dual instructional flights he is always too busy with his training to be able to study the countryside. Mr. Thompson made two solo flights totalling one hour on Sunday.

The following members had secondary dual instruction under Major Packman during the week:—Mr. MacKay (50 mins.), Mr. Walton (30 mins.), Mr. Irving (1 hr. 18 mins.).

Dual instruction flights were as follows:—Mr. A. E. George (30 mins.—skating takes up Mr. George's leisure, and very little is seen of him while the ice lasts, and this accounts for the small amount of flying he has put in since the real Winter began); Miss C. R. Leathart (65 mins., two flights); Mr. Twine (38 mins.); Mr. C. G. Bates (15 mins.); Mr. Somerville (2 hrs. 15 mins.); Mr. L. Smith (30 mins.); Mr. A. D. Bruce (30 mins.); Mr. C. Thompson (30 mins.).

Weather tests of 15 mins. completed 13 hrs. 18 mins. for the week, all, of course, on "L.X.," *Novocastria*.

The Second Monthly Whist Drive, held at the Club House on Wednesday, the 13th, was very successful, and the company of members and friends spent a very happy evening. The Ladies' Prize was presented by Mrs. R. N. Thompson, and was won by Miss L. Skelton. Mr. R. N. Thompson was first among the gentlemen, but returned his prize for offer at the next Drive.

Capt. J. H. Boyd disposed of a large number of bogus lottery tickets, sold in aid of a very worthy local charity, and mixed his salesmanship with a lot of mirth-provoking suggestions.

A motoring member relates that, on approaching the ground on his first landing, he instinctively put his hand down to put on the "hand brake," and found the starting handle (of the Moth, of course). No one cared to inquire whether he managed to reduce the landing speed of the machine or not in this way.

A Seaplane Club Proposal.

The following letter has been received:—

Sir,—The founding of the light aeroplane clubs was one of the greatest steps forward in the history of aviation. When these clubs are more fully developed they should provide a large number of pilots whose services could be requisitioned in a national emergency.

The Army as a separate unit is becoming more out of date every day as new air wonders are produced and the tome when it will cease to exist except as an air auxiliary cannot be very far hence. The same in a lesser degree applies to the Navy, and, if the country is to be prepared for this, it is essential that pilots with experience and knowledge necessary for work on the water should not be lacking among the ranks of the Reserve.

A seaplane and flying-boat branch of those aeroplane clubs which have easy access to the water would be one of the cheapest and most satisfactory ways of providing the necessary pilots and navigators.

To deal with the case of the London Aroplane Club:—This could be taken as a general example. The seaplane station could be either at say Kingston or Hammersmith, both of which places would be of easy access and being in such a central position should receive a good deal of public attention, which would be valuable propaganda for aviation of all descriptions

The consent of the Thames Conservancy, in the case of the former, and The Port of London Authority in the case of the latter would be essential, but where an undertaking of such national importance is concerned this could hardly be withheld though opposition might be encountered. Regarding cost, a riverside slipway with a hangar capable of housing one two-seater float machine and a small flying-boat should not work out at more than £1,000, for which sum the structure provided should be quite substantial and of a permanent nature. This erection could take the form of a pier built over the water, and it is only reasonable to assume that either of the authorities mentioned above would allow such a station to be erected and maintained without payment of any rent, dues, or other charges.

The chief disadvantages of these places would be the limited amount of water space available for landing, and the difficulty of avoiding river traffic, though cross-wind landings would not be necessary as the river turns fairly frequently and it would be possible to land into wind whatever its direction.

On the other hand a site further down the river, at Leigh or some similar place, might be selected. While this would be better from the point of view of sea experience and navigation out of sight of land it would probably mean less flying owing to the distance from town and the more disturbed weather conditions which would be encountered there.

As the prime object would be a training station for beginners only perhaps the up-river position would be the best.

If a river-side aerodrome, or a share of one, could be secured, at which both landplane and seaplane work could be carried out, so much the better.

Regarding equipment the field of choice is somewhat limited owing to low first and running cost being essential. The Moth which gives such an excellent performance as a landplane should be quite serviceable fitted with floats, and together with a Short light flying-boat should meet the requirements for a time at least.

These two machines should be capable of training at least twenty new pilots per year, and giving refresher flight courses to several hundred. (Signed) Ivan Nairne.

[The suggestion is good, but an up-river station is obviously impossible, because novices on water-machines could never be allowed to fly over the closely inhabited river-side areas. But something might be done at Southend or about Sheerness or at Eastbourne or Shoreham if the necessary money could be found.—C. G. G.]

A LIGHT AIRSHIP CLUB.

Commander F. Boothby, in a letter to Sir Sefton Brancker, asked him whether, as the Air Ministry Light Aeroplane Club scheme was still short of one club, he would consider a scheme for the formation of a light airship club. Sir Sefton replied that if a suitable scheme were put before him he would certainly consider it.

Commander Boothby has consequently formed a small committee to investigate the position. With him on the committee are the Lord Cunliffe, who served with the R.N.A.S. and the R.A.F. throughout the war, and Major C. C. Turner and others.

The objects of the club can be seen from the *agenda* which were considered by the committee at the first meeting.

Agenda.

1. Ultimate object of club.

Suggested that our object be to establish in each large commercial port an airship organisation which in peace time would be used for sporting purposes and in war time would be capable of escorting ships entering or leaving the port through the danger zone.

2. Method of achieving this object.

Suggested that Airship Cruising Clubs should be formed in each of the principal ports, supported, if possible, by the Yacht Club associated with the port—e.g., for London, The Royal Thames Yacht Club; Bristol, The Western Yacht Club, etc., etc., with a central organisation based on one of the large airship stations.

3. Preliminary steps.

Suggested that a central club with one airship should be formed this year conforming with Air Ministry requirements so as to obtain the grant of £2,000 offered for equipment and £1,000 per year for maintenance for two years. The first airship would be used to fly round the various ports and demonstrate the capabilities to the local Yacht Clubs. The Air Ministry shall then be asked to form a new club each year, one for the financial year 1926 to be based on Southampton, where arrangements can be made with the Avro Company.

4. Procedure for forming the Thames Club.

Suggested (a) it must be decided what is the minimum on which the Club could start and (b) the maximum for which the Air Ministry can be asked without their rejecting the whole scheme. The minimum would appear to be that they provide accommodation at one of the Government Airship Sheds and the subsidy already mentioned. Alternatively, that they should provide or guarantee the interest on capital necessary to provide accommodation together with the subsidy. It is suggested that maximum for which we can ask is free accommodation, free gas, fuel at cost price and a number of pupils to train at a reasonable fee, and all assistance in the way of handling parties, etc., also that the airship be replaced every two years.

5. Internal organisation of Club.

Suggested that an entrance fee of £5 5s. be charged and members be entitled to fly as passengers at 30s. per hour and introduce guests at £2 per hour, and that the number of members be unlimited. That the shipping interests at each port be asked to support the Club and that for every £100 they subscribe an Officer of the Shipping Line should be trained as a pilot in order that complete understanding may exist between the members of the club and the local shipping interests in the event of war. At the earliest moment races between the various local clubs should be organised and international airship racing be encouraged.

That the Admiralty may be asked to permit airships to land at their establishments and on aircraft carriers and to supply fuel, etc., etc., at cost.

That ballooning should also be encouraged.

6. To consider appointment of sub-committees to deal with finance, technical questions and membership.

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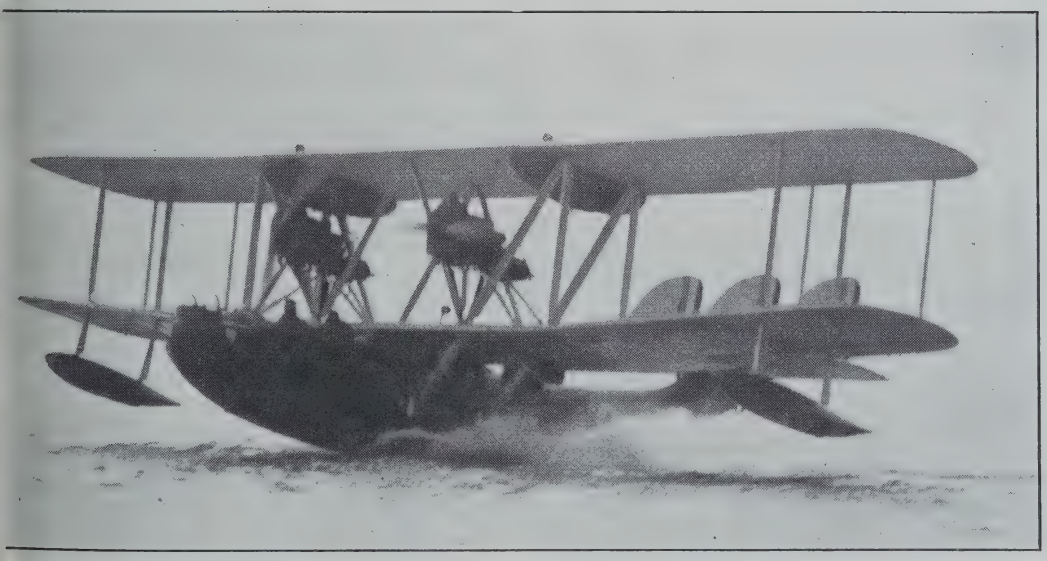
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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 10; Wednesday, 11; Thursday, 5; Friday, 7; Saturday, 0; Sunday, 0.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 23, passengers 76, freight 6 tons.

AIR UNION:

Paris—London: Machines 12, passengers 40, freight 8 tons.

K.L.M:

Amsterdam—Rotterdam—London: Machines 9, passengers 9, freight 1½ tons.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES: Nil.

Total number of trips by British Machines: 23, carrying 76 passengers. Foreign Machines, 21, carrying 49 passengers.

Comparative Figures:

Week ending Jan. 17:

Machines, 44; Passengers, 125; Crews, 54; Total personnel, 179.

Corresponding week, 1925:

Machines, 16; Passengers, 17; Crews, 16; Total personnel, 33.

Corresponding week, 1924:

Machines, 45; Passengers, 66; Crews, 70: Total personnel, 136.

Corresponding week 1923:

Machines, 36; Passengers, 79; Crews, 63; Total personnel, 142.

Corresponding week, 1922:

Machines, 14; Passengers, 14; Crews, 21; Total personnel, 35.

Corresponding week, 1921:

Machines, 15; Passengers, 12; Crews, 17; Total personnel, 29.

Croydon Notes.

The weather was fairly good during the first part of the week and all the services ran to schedule. On Thursday, however, snow set in, and although all the services were attempted only four were completed. A fifth machine nearly completed a trip, but was forced down by snow and finished on the following day. On Saturday all services were stopped by snow and fog. It will be remembered that during the latter part of the week ground transport was seriously interrupted as well as air transport.

It has been decreed that the Vanguard shall do another 50 hours flying by day before she goes on the night service. Accordingly the experimental night service has been postponed until Mar. 1.

Mr. F. L. Barnard and Lt.-Col. Minchin have each done two return trips in the Bristol Bloodhound between Croydon and Bristol during the past week. The Bristol Jupiter VI installed in the Bloodhound is functioning remarkably well and there appears to be a big commercial future for it. It is singularly free from vibration. Its flexibility and reliability are remarkable. Also it is extremely economical in petrol and oil. And it keeps comfortably cool, even in a comparatively slow machine. For the production of this fine engine, which is easily the most powerful air-cooled radial engine of its weight in the World, Mr. Roy Fedden, its designer, and the Bristol Aeroplane Co. Ltd. deserve congratulations.

The Hampstead, which in its original state was rather unpleasant on the rudder, is having a new type of rudder built for it. This is being fitted at Croydon, and the machine should soon be flying again.

The silly season at Croydon, which happens always at this time of the year owing to lack of incident, is in full swing. The usual invalid old lady is taken to Paris in the usual specially constructed Napier-D.H. Air Ambulance. The usual "enormous increase in freight, demanding a special fleet of Rolls-Royce cargo machines," is in progress. All the old newspaper stories, which we have had regularly every winter for the past five years, are being revived. It seems as if the newspapers or the Croydon press agents keep them in cold storage and dish them up as fresh as ever regularly every silly season. Still, if the newspapers are prepared to stand for it, one imagines it does not matter very much.

There has been much activity during the past week at the works of A.D.C. Aircraft Ltd. On Monday, Mr. Perry was flying a D.H.9a and the Martinsyde-A.D.C.I. The following day he was demonstrating this machine, and during the rest of the week he was testing a number of D.H.9as.—G. D.

A SPORTING VENTURE.

Mr. Leslie Hamilton, who has taken part in a number of air events and who lately bought and flew Mr. Raynham's Martinsyde, has now left the R.A.F. He has bought a Vickers Vulcan (Rolls-Royce) which he intends to use as an aerial taxi. For instance, on Thursday next, W.P., he will leave Croydon with a load of passengers for St. Moritz, where he will alight on the frozen lake and will land the passengers at the very doors of their hotels. At St. Moritz he has booked another load for Nice, and he will spend the time until Mar. 1, cruising between London, St. Moritz, and Nice.

On March 1, the experimental night service between London and Paris will be started, and Mr. Hamilton, who conducted the original tests on this route, will pilot the Vanguard for the Air Ministry.

THE ROYAL AIR FORCE AND THE ROYAL AERO CLUB.

It is rather surprising to find the somewhat meagre way which the officers of the Royal Air Force support the membership of the Royal Aero Club. The Royal Aero Club wants members so that it may do its duty by the Sport of Flying. In order to bring the subscription within the reach of the junior officers of the R.A.F., it has been reduced to one-half, i.e., £3 3s. Yet looking down the list of members one notices the absence of almost all the Senior Officers of the R.A.F. This is regrettable in view of the really practical work which the Club does for the Royal Air Force.

Quite apart from the legitimate work of the Club in competitions, races, etc., one cannot overlook the Charity side. Here the Club has assisted all ranks of the R.N.A.S., R.F.C., and later the R.A.F. This has not perhaps been sufficiently brought to the notice of the Serving Officers.

On the outbreak of War the Club raised a Fund to assist the dependents of those killed and has since distributed £20,000. At the present time it is paying out monthly grants to 30 families, and contributing to the education of a large number of children of officers and airmen of the R.A.F. who were left unprovided for.

The Secretary of the Club, Mr. H. E. Perrin, gives a large amount of his time to the other charities connected with the R.A.F. He is on the Executive of the Royal Air Force Memorial Fund and is Chairman of the Grants Committee of that Fund. He represents the Royal Air Force on the Council and Executive of the Officers' Association, British Legion, Officers' Benevolent Department, and is on the Advisory Council of Lord Haig's Services Funds. This is real charitable work of which the Club can be justly proud.

As to the Club itself it provides everything an officer can want. The recent instituted Monthly Dinners have proved a great success and the free discussion of aviation subjects at these dinners has been both interesting and instructive.

What is wanted is more support from those actively engaged in Aviation, particularly those in the Service, and in view of the reduced subscription of £3 3s. for Serving Members, and those in the Reserve, one feels sure it is only necessary to bring this to their notice to ensure a large accession to the membership of the R.Ae.C.

FOOD BY AIR.

Thirty-five steamers are frozen in among the ice in the Gulf of Finland, and the crews of most of the ships are suffering from shortage of food and fuel.

Despite the severe conditions, Finnish Army and Naval aircraft have dropped hundreds of pounds of provisions onto the ice near the steamers.

ADVERTISEMENT PICTURES.

Students of the advertisement pages of THE AEROPLANE, which frequently contain (as they invariably should) better pictures than the editorial pages, will have noticed that some of the best pictures have been done by Mr. Leonard Bridgman, the Staff Artist of THE AEROPLANE. Mr. Bridgman will be pleased to submit designs for advertisements to any firms which may be interested in improving the attractive value of their advertisement space.

MORTGAGES AND CHARGES.

CENTRAL AIRCRAFT CO. LTD.—Mortgage on 179, High Road, Kilburn, N.W., with fixtures, etc., dated Dec. 15, 1925, to secure all moneys due or to become due from the company to the Midland Bank Ltd.

SATISFACTIONS.

AIR NAVIGATION AND ENGINEERING CO. LTD.—Satisfaction in full on Sept. 21, of mortgage dated Feb. 20, 1925, securing £1,200.

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THE AERONAUTICAL
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PERSONAL NOTICES.

DEATHS.

BURRILL.—On Dec. 30, drowned while hunting, Thomas Frank Burrill, late R.A.F., elder son of Thomas Other Burrill, of Masham, Yorks, aged 39.

JENOURE.—On Dec. 19, 1925, at Peoria, Illinois, the result of war experiences, Eric Edward Maynard Shewell, late R.A.F., only son of Frank H. W. and the late Helen Jenoure, aged 27 years.

MARRIAGE.

DARVILL—COLLINS.—On Jan. 16, at Ashtead, George W. F. Darvill, D.F.C., son of Mr. G. Darvill, formerly of East Meon, to Violet Ruth, youngest daughter of Mr. and Mrs. Charles D. Collins, of Ashtead.

FORTHCOMING MARRIAGES.

FAIRWEATHER—SWEENY.—A marriage has been arranged between Flt. Lt. James MacGregor Fairweather, D.F.C., No. 1 (Fighter) Sqdn., R.A.F., and Queenstown, South Africa, and Miss Kathleen Isobel Sweeny, Princess Mary's R.A.F. Nursing Service and Londonderry.

LYWOOD—SMITH.—The engagement is announced, and the marriage will take place at All Souls', Langham Place, between Flg. Off. Ralph Woodcock Gifford Lywood, son of Col. Lywood, of Alverstoke, and Margaret, younger daughter of Mr. and Mrs. F. J. Smith, of Alverstoke, on Feb. 16, at 2.15.

MURPHY—NAGLE.—The marriage of Brig.-General C. F. Murphy, late Royal Berkshire Regt. and Royal Air Force, son of the late Jerome Murphy and of Mrs. Murphy, Killurah-Glen, Castletown Roche, Co. Cork, and Marguerite Marie Nagle, eldest daughter of Mr. and Mrs. Garrett Nagle, of Byblox, Doneraile, Co. Cork, will take place at Doneraile on Jan. 20.

PROCTOR—UNWIN.—The engagement is announced between Capt. S. R. Proctor, late R.F.C., youngest son of the Rev. F. B. Proctor, M.A., and the late Mrs. Proctor, of The Manor House, Sutton-on-Trent, Notts, and Madeleine Unwin, only daughter of the late P. Warnford-Davis, Esq., J.P., and Mrs. Warnford-Davis, of Prince Edward Mansions, Palace Court, W.

SCROGGS—POWELL.—The engagement is announced of Flt. Lt. H. S. Scroggs, R.A.F., only son of Commander H. C. Scroggs, R.N. (Retired), and Mrs. Scroggs, Celden Common, Winchester, and Margaret Fray, only daughter of Mr. and Mrs. E. E. Powell, Shawford, Winchester.

SKOULDING—NORTON.—A marriage has been arranged, and will take place shortly, between Flg. Off. F. A. Skoulding, Royal Air Force, and Madge, daughter of the late Mr. E. Scott-Norton, of Lowestoft, Suffolk.

TROLLOPE—FIELD.—The marriage arranged between Capt. J. L. Trollope (formerly of No. 43 Sqdn., R.F.C.) and Miss Molly Field, of Sutton, will take place on Jan. 30.

BIRTHS.

HAIG.—On Jan. 15, at a nursing home, Farnborough, to the wife of Sq. Ldr. R. A. de H. Haig, A.F.C.—a daughter.

NAIRN.—On Jan. 15, at Beirut, Syria, to Elsie (*née* Barclay), wife of Norman Nairn—a daughter.

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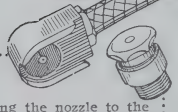
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Edited by C. G. Grey

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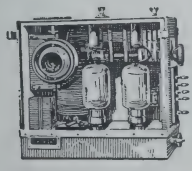
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The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE AIR LEAGUE AND THE AIR ESTIMATES.

On Thursday January 21 the Air League of the British Empire gave a lunch at the Savoy to the London Press and some others to explain the League's policy in relation to the proposed grave decision of the Government to cut down expenditure on the Royal Air Force during 1926-27.

Those who remember political events before the War 1914-18 will recall the fact that the Navy League, under the late Robert Yerburgh with Mr. Pat Hannon as secretary, maintained for many years a steady campaign which upheld the policy of the Admiralty, fostered enthusiasm for the Navy among the people of this country, and resulted in our having at the outbreak of war a Navy which, by sheer size, if not by judicious use, saved England both from invasion and starvation. This present crisis is the Air League's opportunity of performing a like service to the Empire.

By way of preface one would remark that apparently the intention of the Government is to plead that there is to be no cut in the expenditure on the Royal Air Force for 1926-27. Speaking at Chelsea Town Hall on December 16th, Sir Samuel Hoare said that in the normal course of things the Air Estimates would rise next year by some 30 per cent. as an automatic result of the policy of expansion that has been approved by three successive Governments and sanctioned by the House of Commons. He pointed out that this heavy rise would have brought the Air Estimates to something well over 20 millions as compared with the 16 millions of this year and he proceeded to say that he had been able to recommend to the Government a postponement of certain items of expenditure that would avoid anything like that rise.

The Financial Aspect.

To prevent any misunderstanding and twisting of facts between the parties to this argument, it is well to point out that though the Net Estimates for 1925-26 were close on £16,000,000 (the sum, to be exact, was £15,513,000) Appropriation in Aid, which was unspent money carried over from the previous year, brought the total, or the Gross Estimate as it is called, up to £21,319,300. That is to say the Air Ministry had 21¼ millions of pounds to spend last year.

And one is told that this sum has not only been spent but has been overspent. Therefore there can be no Appropriations in Aid to carry over for 1926-27.

Now if, according to Sir Samuel Hoare's speech, the original programme were to be continued, and last year's Estimates of 15½ millions were to be increased by 30 per cent., the Net Estimates for 1926-27 would be again just about 21 millions. And, as there would be no Appropriations in Aid, even with the 30 per cent. rise, expansion the Air Ministry would still have no more money to spend than it has had in the past year.

But as there is apparently to be no rise in the Net Estimates this year, and as there are no Appropriations in Aid, the amount for which the Air Minister will ask the House of Commons will be in or about 16 million pounds. That is to say, cutting out all Jesuitical arguments and casuistry and efforts of the Non-Conformist conscience, the Air Ministry will have to exist on about 16 million pounds this year instead of the 21 million pounds which it had last year.

Nevertheless, because the 16 million pounds or so this



THE FIRST MOTH IN AUSTRALIA.—Here is seen a D.H. Moth flying over the suburbs of Melbourne on Nov. 28, 1925. This machine was the first of its type to be purchased for use in Australia and was acquired by the Controller of Civil Aviation for demonstration purposes throughout the Commonwealth.

year will not be an actual decrease from the 15½ millions of last year, the Government will be able to state with perfect theoretical truth to the British Taxpayer that it has not decreased the Air Force Vote although it has saved the Taxpayer the threatened increase of 30 per cent.

And yet the Air Ministry will have to exist on some five millions less than it had last year, instead of on some seven millions more, which it would have had if the Gross Estimate of 21 millions had been increased by 30 per cent. So in fact the expansion of the Air Force will be decreased by something like 12 millions of pounds. That is to say the Estimates will be 16 millions instead of 28 millions.

The Point of the Argument.

Therefore, when those who read this paper are lured into an argument on the subject of the money which is to be spent or saved on the Air Force, let them distinguish in their minds quite clearly between the 21 millions of the whole of the 1925-26 Estimate, which was given to the Air Ministry to spend, and the 15½ millions which was the amount actually voted out of the 1925-26 revenue. They will find all the Government apologists talking about the 15½ millions and all the Government's critics, who are the supporters of the Air Force, talking about the 21 millions. And so the conversation is apt to get to cross purposes.

To put it another way,—the 21 millions last year was none too much. And the 30 per cent. increase to which Sir Samuel Hoare referred ought to have brought the amount up to about 28 millions. But even on his own reckoning, if there were to be no reductions on the recommendations of the Colwyn Committee, his 30 per cent. increase on the 15½ millions would only bring us up to about the same 21 millions that we had last year. And so we should have been no better off in any case.

Sir Samuel Hoare's Position.

The position of Sir Samuel Hoare on the whole question must be extremely difficult, and one has the greatest sympathy with him. One quite agrees with Sir Sefton Brancker's remark the other day that Sir Samuel Hoare is the best Air Minister we have ever had. His courage and his honesty are beyond question. And one is perfectly certain that Sir Samuel would never set his signature to any Air Estimates in which he did not believe. He would never be a party to humbugging free and independent electors of this country, after the manner of the ordinary politician. So he must find himself torn between his pledge to expand the Air Force to the full 52 Home Defence Squadrons approved by three successive Governments, and his honest desire to economise for the benefit of the Taxpayer.

Naturally one is all in favour of economy, being a Taxpayer to a minute extent oneself. One would feel less badly on the subject of economy if one did not know that the economies which are to be inflicted on the fighting Services will only result in the money which is saved being handed over to the most inefficient of all our industries, the Coal Trade. An one finds little consolation in the remark of one of th chronic humorists of the Aircraft Industry who, after th Air League Lunch the other day, remarked that if th Government would not provide us with the necessary air craft for our defence overhead it was at any rate spending th money on mines to which we might retreat when the bomb ing began.

One always remembers that very early in the history o military aviation, before the War 1914-18, one of the bes officers the Royal Flying Corps ever had (unfortunately h died just when he was becoming most useful) was dis cussing the policy of the Government of the period and dis agreeing strongly from it. Being in those days young an inexperienced in Government methods, one asked him wh he did not resign from his job as a protest against the wa his department was being mishandled by the Department o Military Aeronautics at the War Office. His reply was tha if he chucked the job there were a dozen men who woul take it and obediently follow the official policy, and that som of them might make a grievous mess of it, whereas so lon as he held the job he could at any rate by proper officia methods get some things done and make some progress.

Possibly something of that attitude of mind may be behin Sir Samuel Hoare's assent to the proposed dangerous reduc tion in the Air Force Estimates, for one still insists that i will be a dangerous reduction even though the Net Estimate for 1926-27 may be slightly higher than the Net Estimate for 1925-26.

Real Economies.

Undoubtedly there are great economies which could b effected in the expenditure on the Royal Air Force. A great deal of money could be saved, as indicated in this pape last week, by building experimental machines without thei full equipment. But such a saving would only amount t tens of thousands of pounds or perhaps to an odd hundre thousand or so. It would not amount to millions.

Perhaps a quarter of a million might be saved by shuttin down all except the small useful fraction of the Royal Air craft Establishment at Farnborough. A few more tens o thousands could be saved by stopping flying experiment with airships and waiting till the new big airships are actu ally built. And perhaps a few more tens of thousands coul be saved among the Civil Servants of the Secretariat of th Air Ministry itself, without in any way decreasing the num ber of serving officers who are usefully employed on the Ai Staff and in the Supply and Research Department.

But though perhaps all told a million or so might be saved one can see no way in which a matter of five millions ca be saved (let alone 12 millions) except by cutting down th expenditure on the new aircraft which are so badly needed to equip new squadrons and to re-equip existing squadron which are now flying obsolete or obsolescent machines.



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If Sir Samuel Hoare and his subordinates can find a way of saving those five millions, or even four millions, without practically ruining the Aircraft Industry then one can only say that the Children of Israel, during their forty years in the Wilderness with their limited diet of quails and manna and water, would have done very much better with Sir Samuel Hoare in charge of supplies instead of Moses.

To continue the Old Testament simile, one can only wish success to the Air League in its effort to uphold the arm of Sir Samuel Hoare as Aaron upheld the arm of Moses, and acted as his voice, or publicity and propagandist agent, in those various crises which are so well and accurately recorded in The History of the Israelites.

The Position of the Press.

The position of the Press in relation to this Air League agitation is as difficult as that of the politicians. No newspaper dare alienate the affection of its readers by advocating heavier taxation. And no newspaper as yet has reached the point of declaring openly as its editorial policy support of the Air Force as our First Line of Defence to the detriment of the Navy.

The "Silent Service," with its subtle hold over the Press through serving officers, in spite of its avowed refusal to institute an official Department of Information, or Advertising Department, succeeds in getting far more publicity than do all the other Services of the King put together. So it gets its 55 millions per annum without difficulty, because no newspaper dares to expose the inefficiency and ineffectiveness of the Navy during the War 1914-18. In spite of the fact that its vast size did save us from actual starvation, the Navy let us down badly, and very nearly lost the War.

The editors-in-chief of the majority of newspapers throughout the British Empire, being mostly elderly gentlemen, and not at all in touch with the ideas of the younger generation, still believe that their readers regard the Navy as being the mainstay of the Empire.

If any of them ever went to Wembley they apparently never learned the lesson so clearly shown there, which was that the Air Force is now regarded by the people of this country with the same affectionate admiration with which the bluff, breezy and hearty sailorman used to be regarded in the simple-minded past. And they can scarcely be expected to know that in these days of quiet and smooth-working efficiency, and intellectual honesty, the terms "hearty" and "breezy" are as opprobrious as are "well-meaning" and "thoroughly nice."

The editors have not grasped the idea that this is a mechanical age and that the neat quiet smart efficient airman of the R.A.F. has quite supplanted in the hearts of the populace the sailorman with his bell-bottomed trousers and his baggy blouse. And so the Press does not know that by backing the Air Force through thick and thin it will in fact be acting in the way which will most please its readers.

The aeronautical correspondents of the London papers have certainly done their best for this new campaign for the equipment of the R.A.F. And it is admittedly to the credit of the editors of the majority of the important London newspapers that, without committing themselves editorially through their leading articles to the support of the Air League campaign, they have at any rate allowed their aeronautical correspondents to open the agitation in their own columns.

One peculiar fact about the attitude of the London papers is that *The Times* and *The Telegraph*, certainly the two papers which carry the most weight among the serious people of this country, have both published long articles on the need for better financial support of the Air Force. Even *The Morning Post*, the established enemy of the Air Ministry and all its works, has held forth on the unwisdom of cutting down the equipment of the Air Force. And *The Star* and *The Evening News*, the two most powerful evening papers, have at any rate mentioned the cut in the Air Estimates as a matter of interesting news.

But *The Daily Mail* which has so often done really valuable work for British Aviation, and has not forgotten to advertise the fact, and *The Daily Express*, which long before the War paid much attention to aviation when other papers neglected the subject, have remained almost mute on this vital matter of Home Defence, at any rate up to the moment of writing.

A Mansion House Meeting.

At the Air League Lunch Mr. Philip Foster, the Chairman, said that the next move would be a Mansion House Meeting, to be organised by the Air League. Mansion House Meetings as such are of little value, because even if the biggest hall in the Mansion House were packed with people it could not hold enough of them to carry any particular weight in the Councils of the Cabinet. A Hyde Park demonstration or a Trafalgar Square riot is the only thing that moves a Cabinet. And our aeronautical state is not yet sufficiently perilous for that. But the Mansion House itself, as the place for a meeting under the patronage of the Lord Mayor, becomes a kind of microphone through which what is said at a meeting is broadcast throughout the British Empire.

The Press, which has already shown willingness to support the campaign in favour of adequate finance for the Air Force will have a much better excuse for devoting many columns to the subject if the material to fill those columns is uttered in the Mansion House.

One hopes most sincerely that if such a meeting should take place it will be an unqualified success. The members of the audience matter little. What matters most are the names of those who support the policy of the Air League by appearing on the platform. That is what assures plenty of space in our intelligent Press. Popular Modocks secure columns when men who know their subject are compressed into inches. But for such a crisis as this, men of genuine importance are needed.

Speakers of any creed or kind speak better to a full house, so the hall might as well be filled by members of the Aircraft Industry as by anybody else. If the Members of the Society of British Aircraft Manufacturers give their Design and Works Management Staffs a holiday to attend the Meeting the said Staffs might be the better for hearing the precariousness of their positions stated elsewhere than in this paper. They might thus be spurred to fresh efforts in design and construction. And there would be no need to pay them time-and-a-quarter for going, as certain British workmen demanded when asked to go and listen to political speeches in their firm's time during the War 1914-18.

Some Press people have said that the speeches of Mr Philip Foster and Mr. C. R. Fairey at the Savoy were not sufficiently exciting nor sufficiently alarmist to provide attractively sensational matter for the newspapers. One is very glad to have that opinion. It shows that both Mr Foster and Mr. Fairey have opened the campaign in the matter best suited to produce serious effects.

When the British Nation is faced with a really grave crisis it prefers to have its facts put before it in a moderate and convincing manner. No people are more attracted by sensationalism than are the English. That accounts for the success of our cheaper newspapers. But those who provide these sensations know perfectly well, when they take the trouble to think, that the very Englishman who enjoys those sensations knows perfectly well that they are only provided to tickle his mental palate.

When there is serious mental food for consideration he prefers to have it served to him in a solid form. The Englishman has learnt to appreciate American cocktails and French sauces. But at heart he prefers the roast beef of Old England when he is really hungry. And his mind works on the same lines as his stomach.

Therefore one hopes that when the proposed Mansion House Meeting is being organised those who are to organise it will avoid the hot-air merchants and the Modocks and the sensation mongers and will get serious men with knowledge of the British Empire and its responsibilities to speak on the subject of Air Defence and that if possible they will get at least one man of proved financial ability to talk to the City of London on the financial aspects of the case.

The Great Opportunity.

There was a time when the Air League in its efforts to popularise aviation was dragged, against the better judgment of the more serious members of its Council, into a series of stunts, such as that Albert Hall Ball which was such a lamentable failure, and stunt circularising and so forth. The Executive Committee has now been strengthened and those responsible for the Committee have learned that serious subjects must be tackled in a serious manner.

As one has said on many occasions one hopes to see the Air League in the position which was held by the Navy League when it had the late Robert Yerburgh as its Chairman and the very much alive Pat Hannon, now M.P., as its Secretary. What the League needs is a man of Mr. Yerburgh's weight to give it the necessary political status and it needs an organising secretary with the energy of Mr. Pat Hannon to push its claims among the people of the country.

In Mr. Gordon it has an excellent General Secretary, but thanks largely to his personal efforts in enlarging the membership, the routine work of the League and its office organisation is now such that no one man can possibly do that entirely necessary work and at the same time rush about the country making speeches and organising branches and so forth. There seems to be here a splendid opening for a man of the mental calibre of Mr. Pat Hannon, or say, Sir Sefton Brancker if the work could be made worth his while. If any reader of The Aeroplane happens to know of such a man one would be very glad to know about him and to put him in touch with the Executive Committee of the Air League.

Meantime one wishes the Air League every possible success in its new campaign.

THE AIR LEAGUE SPEECHES.

Mr. Foster's Speech.

After the lunch was over Mr. Philip Foster announced that it was the considered opinion of the Air League of the British Empire that though the Country and the City of London are to-day comparatively safe, owing to the political outlook, a small amount of neglect of, or indifference


FAIREY
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to, our Air Arm on the part of any Government would render the Country and the City defenceless should any foreign Power launch an attack against us.

He recalled how at the end of the War 1914-18 we were the strongest Air Power in the World and how we had lost our strength and had fallen to the position of a second-rate power. He said that fortunately the rest of the World had not yet recovered from the effects of the War, so that we could still rest in comparative security.

Concerning the Aircraft Trade, to which he referred as being one of the main foundations of our Air Force, he said that it had fallen from a flourishing condition of some 150 companies, employing hundreds of brilliant designers and thousands of skilled workmen, to a numerically small industry, still sufficiently prosperous and very efficient, but needing only a little, such as the sudden shortening of orders, to put it in a condition of struggling against adversity.

He recalled how the Governments of other nations had helped their Aircraft Industries to capture the World's market and how our Government had done nothing. To-day thousands of French machines were being sold to foreign Governments and Germany was selling commercial aeroplanes all over the World.

While any nation, however peaceful might be its intention, maintained a large Air Arm, it was essential for the safety of our Empire that we should be as strong as, if not stronger than, any foreign Power within striking distance of our shores. The policy of reduction, or the decision not to complete the Air Defence scheme for 52 squadrons which had been announced three years ago, was against the considered opinion of every single Government since the War.

Mr. Foster quoted a speech by Mr. Baldwin in the House of Commons on June 26, 1923, another by Sir Samuel Hoare on October 17, 1923, another by Mr. Leach on February 19, 1924, and yet another by Sir Samuel Hoare on March 12, 1925, all endorsing the policy of at least a One-Power standard in the air. He then quoted Sir Samuel Hoare's "reduction" speech at Chelsea on December 16, 1925, to which reference has been made earlier in this article.

He pointed out how significant it was that the Geddes Committee of 1922, in spite of its famous axe, reported that the development of the Air Force meant real economy in the national Services and from that report he quoted the following passage:—

"Economies to an increasing extent ought to result in the older arms from the advent of the Air Force. We have in mind not only the substitution of aircraft for certain other arms of the older services, such as light cruisers or cavalry, but a revolution in the method of carrying out certain operations. We are particularly impressed with the very large savings which we are told can be realised in the Middle East as soon as the transfer of responsibility from the Army to the Air Force can be effected.

"By the use of aircraft in this region it has been found possible to reduce the estimates in respect of the Middle East from £27,000,000 in 1921-1922 to £13,000,000 in 1922-23. It can no longer be denied that by the intelligent application of air power it is possible to utilise machinery in substitution for and not as a mere addition to man-power."

Mr Foster recalled that it was before the War so stirred up public opinion that our Navy Estimates were largely increased and that as a result our country was saved and our communications were kept intact during the War. He asked the Press to do the same now for the Air Force

MR. FAIREY'S ARGUMENTS.

Mr. C. R. Fairey was then called upon to address the assembly. He began by remarking that when an aircraft manufacturer speaks on such a subject as this he laid himself open to the charge of being an interested party and his remarks would necessarily be discounted.

Here one would like to remark that of all aircraft manufacturers Mr. Fairey is less than any other open to such suspicion. Without drawing odious comparisons one may safely describe Mr. Fairey as being the most successful of all our aircraft manufacturers. He started with nothing before the War, when he was merely a draughtsman with Short Brothers, and he must by now have amassed what would be considered a respectable fortune in any country in the World.

One has, of course, no knowledge of his personal finances but one judges that he could very well afford to shut down his factory, disperse all his men, keep his few really essential men going on pensions and then take a trip round the World for three years or so to enlarge his already comprehensive knowledge of the aircraft of other nations, and return, when this unhappy nation had come to its senses, quite ready to re-open his factory and make yet another fortune out of aircraft construction, working with capital which he would have accumulated by not having had to pay wages while his factory was shut.

The only people to suffer in such an event would be the employees of the firm. Therefore Mr. Fairey's remarks may be taken rather as those of a statesman viewing the situation dispassionately than those of a manufacturer who is afraid of losing orders.

Mr. Fairey said that he was speaking for those on whose shoulders would fall the burden of organising supplies in the event of war, namely the Aircraft Manufacturers. He assumed that the rumour about the forthcoming cut in expenditure on the R.A.F. were correct.

Three years ago the Government of the period laid down the principle that there should be a minimum of 52 Squadrons for Home Defence and they endorsed the principle that we must depend for our safety on our good right arm and not on the good will of our neighbours. The House of Commons received those proposals without protest. The Labour Government agreed. And this policy was again endorsed when by the swing of the pendulum the present Government again came into power. Rumour now said that the scheme for 52 Squadrons was not to be completed until the year 1935. And the stock of reserve machines was to be cut down.

The Aircraft Industry consisted of twenty firms, of whom four made aero engines. The original programme, if unaltered, did provide a living for those firms and made possible a certain amount of technical competition. All these firms supported designers and experimental staffs and carried out experimental and research work at their own. They represented the nucleus from which the war supply of aircraft and engines must come.

People did not realise that aeroplanes were consumable munitions of war and that the Air Staff had calculated that from the outbreak of war losses of 50 per cent. per month of the machines in the fighting line might be incurred, even those this did not mean the same loss in pilots. Thus it might be reckoned that the life of an aeroplane in war was about one month.

It followed that the Aircraft Industry could not increase its output ten-fold or more without an interval of preparation in which to acquire men, material and so forth. To meet the war requirements of the present Air Force an interval of three to five months, probably longer, would be needed for such preparations. And during that time the Air Force would have to reply upon its reserve of machines and engines while the Industry was getting into its stride. To cover even such a period a reserve of at least 300 per cent. of front-line machines would be needed.

Thus obviously any cutting of the reserve would mean that within a few weeks of the outbreak of war the Air Force would be immobilised on the ground.

Although the British Aircraft Industry was small it was at present in a satisfactory condition. He understood that it was proposed not only to reduce the reserve of aircraft by handing out the reserve machines to the squadrons which were now in being but to reduce the amount of money available for the building of new machines in the succeeding year.

He said that the Trade were not whining about the loss of orders. They were far too hardened for that, but he would say plainly what the effect would be if orders were cut down. A certain number of firms would go out of the Industry for ever. Expert designers would be lost, skilled men would become unemployed and would go out of the Trade, and those who were concerned with aircraft manufacture would lose the confidence that had been built up when the present programme was decided. He asked what inducement there was for young men to take up aeroplane design as a career unless there were some sort of security attaching to it?

If we were to maintain our position as an Air Power, said Mr. Fairey, the Trade must have enough support to maintain its design staffs and to make progress. The Royal Air Force must be in a position also to meet the first onslaught of an enemy.

In the first clash of an air war a successful power could prevent the mobilisation of its enemy and could put its factories out of action. After that the loser need not worry about making war. He reiterated his statement that we have not at present sufficient reserves. And if the scheme for 52 Squadrons for Home Defence was not to be completed until 1935 there would be no Aircraft Industry to support the R.A.F. If the balance as between the R.A.F. and the Industry were disturbed there would be no use in building either aircraft or Home Defence Force.

The British pilot had shown himself to be the most dogged fighter in the World. We had an Air Staff which was certainly not lacking in imagination and had won the confidence of everybody concerned. The Air Force had won the good will of the Public and of the Press and of the House of Commons.

The only obstacle to air defence was finance. By spending a few millions we could be the first Air Power in the World. We might talk about disarmament, but we could never get a hearing on the subject of disarmament till we were in a position to dictate terms. And we could do that as soon as we became the first Air Power.

Commander Kenworthy, M.P., in thanking Mr. Foster and Mr. Fairey for their speeches, said that while the nerve centres of the Nation lay exposed to attack we could not afford to cut down our Air Force. He advocated one Ministry of Defence. He said that our Civil Aviation was disappointing in that we lacked Empire air routes.

Mr. Foster, in reply, said that he hoped the Air League would succeed in organising a Mansion House Meeting.

Mr. Fairey, also replying, said that those who felt that the subject of the Meeting was worthy of support should support the Air League.

With which sentiment one cordially agrees.—C, G. G.

BRITISH SCHNEIDER TROPHY CHALLENGERS.

The National Aeronautic Association of America has announced that it does not propose to postpone the date of the next Schneider Trophy Contest from the date already fixed in October of this year, namely October 24-26.

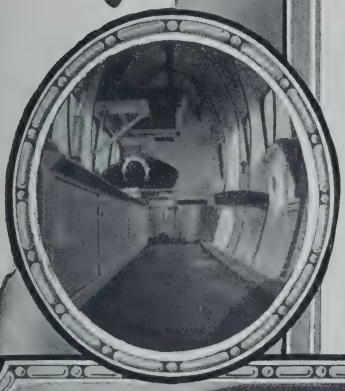
There is a tendency in some quarters in this country to regard the American decision as unsportsmanlike. One would point out that in 1924, when our only challenger broke down during its test flight, the American Navy, in a most sporting manner, refused to claim a fly-over and allowed the contest to be declared void for that year. After that proof of sportsmanship we in this country did practically nothing towards producing a real speed machine until about six months before the next contest. Therefore it was purely our own fault if we did not put up a better show in 1925.

We can scarcely expect the Americans to keep on postponing the contest till we have satisfied ourselves that we have produced a seaplane which will win it. And there is every reason why the Americans should win the Trophy outright next year by a fly-over, and so put an end to the constant expense of building Schneider defenders, if we do not take the contest sufficiently seriously to go to the trouble of winning it on our merits.

However, one is glad to be able to announce that one individual at least has definitely made up his mind to challenge for the Trophy in the best interests of British sportsmanship.

On Tuesday morning, while THE AEROPLANE was going to press, Mr. Sam Saunders of Cowes, the famous builder of racing motor-boats, telephoned to say that as the result

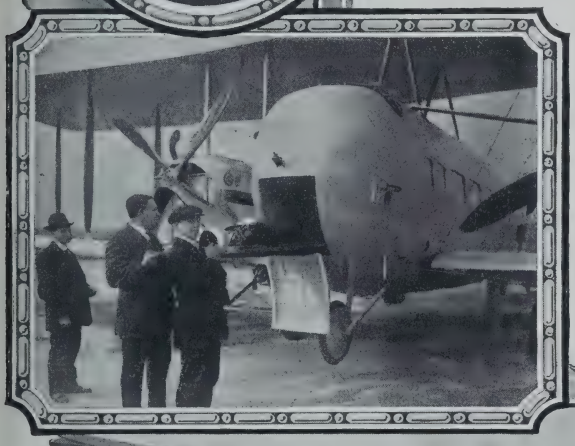
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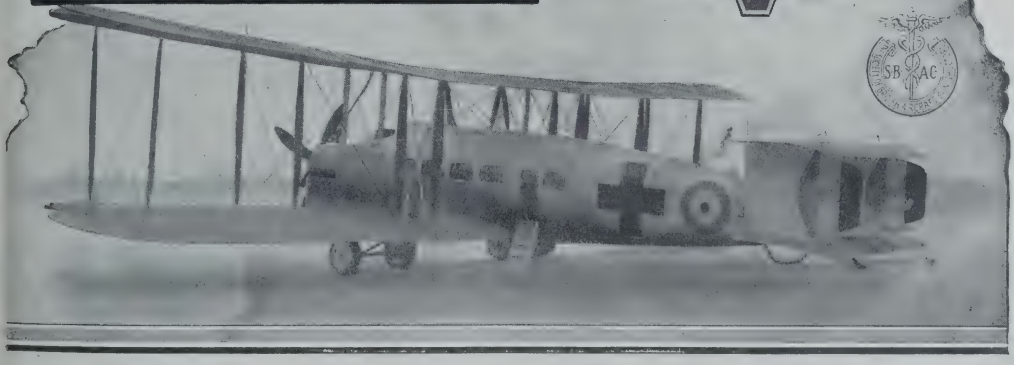
of all types for Commercial, Naval, and Military Purposes.

The machine illustrated is the Vickers "VIMY" Ambulance, as supplied to the Royal Air Force for operation in the East, where this type has proved of great value for the rapid evacuation of sick and wounded.



Fitted with twin 450 H.P. Napier "Lion" engines the "VIMY" has accommodation for a crew of 2 and Doctor, Nurse and 4 stretcher cases or 8 "sitting up" cases.

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the American decision not to postpone the race, and because nobody else in England had up till the present announced their intention of challenging for the Trophy, he himself intended to build a team of challengers.

For some months past Mr. Saunders' design staff have been hard at work on the designs for a speed machine on entirely new lines, but by no means a freak. Ever since the American winning machines were quartered in the Saunders' sheds at Cowes in 1923, Mr Saunders and his designers have been keenly interested in speed machines and these new challengers will be the result of that study.

No announcement can yet be made as to the engines which will be used nor as to the general type of machine, but knowing a good deal of Mr. Saunders' energy when once he is roused, and knowing the rapidity with which he built and tested his racing motor-boats, one feels that at any rate his machines will be out and flying and properly tested in plenty of time for the contest. One can only hope that h designs may prove as excellent as the workmanship in h shops has always been. And even if one of his machine does not win, to Mr. Saunders will at any rate belong th eternal credit of having definitely announced his intentio of defending the honour of British sport.

The Royal Aero Club need not notify its intention to cha lenge for the Schneider Trophy until Mar. 31. Several firn in the British Aircraft Industry have been discussing th building of a Schneider Trophy challenger and probably or or two of them will actually produce such a machine, espec ally now that Mr. Saunders has set such an excellent e: ample. Competition is always good for trade and the mo challengers we build the better will be our chance of winnin And, even if we do not win, the building of those machine will at any rate do something to advance progress in Britis speed machines.—C. G. G.

THE THIRD ROYAL AERO CLUB HOUSE DINNER.

The third of the Royal Aero Club House dinners, on Jan. 20, worthily maintained the standard set by the two previous functions of the same type—both in the gastronomic and the more purely vocal sections of the proceedings. The ostensible subject of debate was the Auxiliary Air Force, and the chairman for the evening was Sq. Ldr. Lord Edward Grosvenor, officer commanding No. 601 (County of London) Bombing Squadron, the Auxiliary Air Force.

The Chairman opened the proceedings by very neatly passing the business of introducing the subject of the evening to Air Commodore Hearson, O.C. the Auxiliary Air Force.

It is not therefore to be assumed that the chair failed of its duties, for during the whole evening it suffused a genial glow over the whole meeting, which added appreciably to the amenities of the evening.

Air Commodore J. G. Hearson, C.B., C.B.E., D.S.O., after remarking that he was no good at making speeches proceeding to make an exceedingly interesting speech which was very much to the point and which occupied little more than fifteen minutes. He evidently realised that brevity is the soul of wit and his speech should be an example to other speech-makers at these functions.

He said that many public announcements have been made on the objects and aims of the Auxiliary Air Force by speakers far better qualified than himself. None the less he felt that he was justified in reiterating the importance of certain points in the scheme. The Auxiliary Air Force Squadrons are being raised in the same way and with very similar terms and conditions of service to units of the Territorial Army, but the Auxiliary Air Force Squadrons are destined to take their place amongst the combatant units of the Air Defences of Great Britain. That is to say, they will form a part of our first line of defence. It is designed that all Auxiliary Air Force Squadrons shall be bombing squadrons and as such they may be described as being in the forefront of the first line of defence, for bombing is the counter-attack of the defensive. Although he did not mention it he might have suggested that no machines other than the heavy bombers could lift one of the Squadron Leaders.

He went on to say that in the Auxiliary Air Force Squadrons undertake not only to be at their posts at a threat of possibility of air invasion, but also to proceed on any bombing expedition the points of departure and intended return of which are within the British Isles. So the personnel of these Squadrons are destined to take a very real man's part in the defence of the country and to take it in the very earliest engagements. This gives no time for training much less enlistment under the stimulus of a wave of warlike patriotism and each officer and man must be ready *before* the whistle goes to take his place and be prepared to carry out a difficult task. There is no reserve character about such service and the man who waits till war arrives is no use to us.

There are many reasons why it has been decided that certain of the Squadrons of the Air Defences are to be on an Auxiliary basis, but not the least amongst them, and one which is of particular interest to those in the Industry and those immediately connected with it is a desire of the responsible authorities to spread interest in and knowledge of flying throughout the Nation. Herein, those of the Auxiliary Air Force find themselves in the same field of endeavour as the Royal Aero Club whose work in the matter of the Civil Flying Clubs is already bearing good fruit.

Air Commodore Hearson said that he looked on those Clubs as a valuable recruiting and training ground for the Auxiliary Air Force and he would like to see one flourishing in the vincinity of each Auxiliary Air Force Squadron. He did not mention the fact, but as a matter of fact Clubs are more numerous at present than the Auxiliary Air Force Squadrons so it is up to the Auxiliary Air Force to catch up with the Clubs.

He then returned to the progress of the Auxiliary Air Force Squadrons. Of the six Squadrons at present con templated, four (two in London, one in Glasgow, and or in Edinburgh) have already come into being, and are callin for officers and men, while a fifth will commence to form i Birmingham this year. The Commanding Officers of thre of the four Squadrons were present at the dinner and h assured those present that he was more than satisfied having such officers responsible for the first units of a ne Force. He said that progress is slow but that is a fau on the right side if it could be called a fault at all for th undertaking is a new one and we want to live to regr as few mistakes as possible.

No. 600, the City of London Squadron, has had mar applicants for commissions, from amongst which it shou be possible to find enough really good officers to meet a requirements which it appears wise to fill for the moment.

In 601, the County of London Squadron, Air Commodo Hearson said that their most excellent chairman, Lor Edward Grosvenor, is always coming to him to tell hi of his latest find. He thought therefore that we can feel sati fied that the road to success lies in front in the matter the commissioned ranks for the two London Squadrons.

In the case of the two Squadrons in Scotland, he w afraid that candidates for commissions are not yet exact tumbling over each other. But he felt sure they wou ultimately arrive.

In the matter of airmen, the two Scottish Squadrons a doing well. Recruits are coming forward in numbers and quality. The Auxiliary Air Force wants men who are skill tradesmen as well as patriots and sportsmen and already th are coming to enlist in Scotland. In the Edinburgh Squadr the first parade of newly-enlisted Auxiliary Air Force a men, a few of them old soldiers but most of them ex-B Scouts or Boys' Brigade, made the regular airmen of t Squadron feel distinctly anxious about their own prowess parade.

In the London Squadrons recruits for the ranks are co ing forward very slowly, and among those who have present themselves skilled tradesmen are sadly few. This is pe haps to be expected for here in London it is more diffic to spread the gospel and the family feeling is not so ea to acquire even with the "Squire of London" as one of t Squadron Leaders.

As yet the authorities are not over anxious on this sco but they do need all the quiet help such as those keenly i terested in the Aircraft Industry can give. They do not want rush of recruits who do not know their own minds or w do not possess the right qualifications, but they do need steady flow of good men who have thought it over and a satisfied they are coming to a good show to serve wi other good fellows as good as themselves.

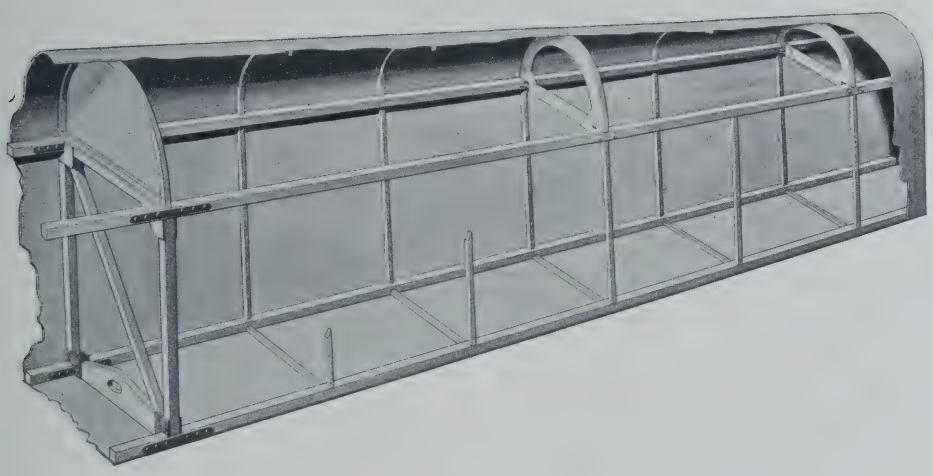
Air Commodore Hearson said that he could not conclu without bringing before the notice of those present th superman, the regular Adjutant of these Squadrons. H is a great task and he assured the company that the Auxilia Air Force was well found in this matter. There was time left to speak of the organisation and terms of servi but he invited questions on these points. He concluded thanking those present for the way in which they h listened to him and knowing how much they had aviati at heart he felt confident that they would readily assist the matter of provision of suitable personnel for the Auxiliary Air Force Squadrons.

Mr. Handley Page, who can invariably be relied upon say something worth hearing, whether it is strictly to t point or not, then made what was, in point of quality, o of the best of his many good speeches but which it was f in some quarters was excessive in quantity. This raises t question as to whether these debates are to be regarded sol as social functions for the entertainment of members of t Aero Club, or as serious debates upon subjects of real i portance and often of some complexity. Brevity is an

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vantage in any speech—but in serious debate brevity carried to excess may involve an inadequate presentation of the speaker's case. If the Aero Club dinners are regarded as purely social functions Mr. Handley Page's 35 minutes was excessive. But it is obvious that he did not regard the occasion in this light, and he was not ready to leave unsaid anything which might usefully be said.

His essential point was that the Auxiliary Air Force—together with the regular Air Force—formed a body which must be immediately available for service on the outbreak of war. The air force in war was necessarily dependent on the Aircraft Industry for supplies—if that industry failed to produce aircraft, the R.A.F. inevitably became useless within a very short time. The Industry in its present state was not adequate in scale or equipment to meet the inevitable demands of the R.A.F. immediately war began. They would have no skilled engineers or craftsmen to spare at such a time. On the contrary they would require a large and immediate increase in staff, and all the skilled men already in the industry would be needed to train and supervise this new labour.

It was therefore not to be expected that the Aircraft Industry could support the Auxiliary Air Force by encouraging their skilled personnel to enlist therein. Any such action would be practical suicide on their part. From the Air Force point of view this would be fatal—their operations would inevitably collapse within a very short period for lack of the essential supplies. If the Royal Air Force formed—as he was convinced it did form—an essential and vital part of this country's defences, a sound Aircraft Industry, capable of meeting the war demand for equipment, was of equally vital importance. The Aircraft Industry to-day was not in a position to meet such a demand within the time which would be available in the event of war. Any proper appreciation of the actual condition of affairs to-day must lead to the conclusion that the establishing of the Aircraft Industry on a basis adequate to back the efforts of the R.A.F. was of greater real urgency than the expansion of the R.A.F., whether by increase in the regular strength or by the formation of Auxiliary Squadrons.

MR. G. C. COLEBROOK asked for more particulars of the terms of service in the Auxiliary Air Force, and of the inducements which existed to the right type of man to join either as an officer or in the ranks. Upon what did they rely to persuade, say, the motor-car mechanic, who spent his day scraping—in a motor-car engine bearing, to take a busman's holiday in the evening, scraping in a similar bearing on an aero-engine? The Auxiliary Air Force was a laudable effort to meet national needs in an economical manner, but it was important to make it attractive to the right type of man and to advertise its attractions in the clearest possible manner.

AIR COMMODORE HEARSON, in reply to the last speaker, said that the terms of service in the Auxiliary Air Force were subject to minor variations in detail those obtaining for the Territorial Army. Members received a retaining fee and were paid at Air Force rates during the period of their annual training. So far as the inducement offered to recruits to take a "busman's holiday" went, he thought, they were those of the provision of a first-class mess, with the social activities invariably resulting therefrom. The large number of recruits in Glasgow was an answer. As regards Mr. Handley Page's point, it was obvious that it would be unwise to have all the brains making equipment and none using it.

MAJOR R. H. MAYO said that he understood that the would-be officer of the Auxiliary Force must learn to fly before he could be accepted. To ex-officers of the R.A.F. who could already fly this presented no difficulty, but the man who could not already fly had to defray the expense of learning. If, after learning, he was granted a commission, those expenses would be reimbursed. But what guarantee had the aspirant that he would be accepted when he had learnt? It would cost such a man nearly £100 to learn to fly and if he ran a risk of not being accepted a large proportion of suitable candidates could not face that outlay.

AIR COMMODORE HEARSON explained that they wanted to attract keen men—men who wanted to fly and were willing to do something towards doing so on their own initiative. A candidate could easily discover whether he was likely to be accepted if he did learn to fly. Any decent flying school could tell him after a very short period of training whether he was likely to learn to fly with reasonable ease, and the man who could not satisfy their very modest requirements—which was the possession of an A licence—should be able to discover the fact after, at the outside, 10 hours' instruction. His liability therefore need never exceed the cost of this amount of training. If at the end of this period he was assured that he was justified in going on, he could also feel reasonably certain that his expenses up to a limit of £115 would be defrayed by the State.

MR. HAROLD PERRIN (Secretary of the R.Ae.C., and of th London Light Aeroplane Club) pointed out that the cost obtaining an A licence at a civilian flying school would at least £70 to £80. In the Light Aeroplane Clubs the aimed at teaching their members from the beginning to th A licence stage, at a cost to the pupil in the neighbourhoo of £15. The Government were ready to pay up to £1 apiece for this training, and he suggested that if the Gover ment would support the Clubs a little more generously, an use them to supply the Auxiliary Air Force with officers, very substantial saving could be made, and at the same tim the work of the Clubs, as agencies for popularising flyin would be greatly extended.

SQUADRON LEADER JAMES, of No. 600 (City of Londo Squadron, appealed for the maximum possible support fro members of the Club for the Auxiliary Air Force. He migh describe himself as predominantly a fox-hunter who felt th he ought to play what part he could in the movement even it meant some sacrifice. The Auxiliary Air Force represente a movement fully in accord with those popular catchwords the day—Democracy and Economy. Whether Democracy Economy, as they were at present understood, were in ther selves desirable, might be open to question. But they we catchwords governing the present state of affairs, and those who had the interests of the country at heart shou support the Auxiliary Squadrons even if that involved sacr fices which they ought not to have to bear, because th Auxiliary scheme was the only one which was at prese practicable.

MR. GEOFFREY DORMAN said that a large number of i quiries reached him from men who would like to apply f commissions in the Auxiliary Force. Three out of eve four, however, were unable to stake the cost of learning fly against the possibility that their application for a commi sion would be accepted, and that there was a need for son method of reducing the cost of tuition. Air Commodo Hearson had said that when a pilot who had learn to fly was posted to the Auxiliary Air Force th previous training counted for little. Would it not, ther fore, be feasible and economical for them to do *all* the training with and at the expense of the Auxiliary Air Forc Not many candidates of the right class can afford to p down £100 at the present time.

SQUADRON LEADER H. DAWES, M.B.E., said that it could taken as a fact that the Air Ministry recognised that the A Force depended on the Industry and that they had no inte tion of draining that industry of their skilled men. On th contrary, the Auxiliary Force, if it were a success at all, wou help the Industry directly because it would provide an adc tional demand, but to a much greater degree, by increasin the public understanding and appreciation of the importan of Air Defence. They felt therefore that they could co fidently ask the Industry to support them in many other wa than those to which Mr. Handley Page had referred.

MR. W. H. SAYERS said that the fact that in Glasgow a Edinburgh men, but not officers, were coming forward, whe as in London the reverse was the case, was not surprisin Glasgow—he spoke as one who was trained at Glasgow was largely populated by young engineers from impecunio families who knew that they would have to work for the living and who could not afford to become officers. H there been an Auxiliary Air Force squadron in Glasgo twenty years ago, when he was an apprentice, he wou have joined like a shot. But to-day he neither would, n would he be accepted if he did, apply. The Auxiliary A Force ought not to attempt to attract skilled men from a of the productive industries—they would all be needed supply the Services when war broke out. They should for the clerk and such-like, who had an inward urge towar higher things, and give him the chance to develop h mechanical instincts to the good of his country. In a effort in this direction those present would give the their entire sympathy, but it was to the politician, n the Aero Club, that they must address their appeals if th desired an Auxiliary Air Force which was based on a tr and not on a catchword, interpretation of Democracy a Economy.

COL. MERVYN O'GORMAN admitted that he proposed to t and fill the part usually played by one who was unfortunate not present on this occasion. It is evident that the partic lar absentee is distinguished by great abilities as an aft dinner speaker, of the most usually acceptable kind. M O'Gorman succeeded so admirably in his confessed intenti that one has not the vaguest recollection of what he did s —but a very strong one as to how he said it.

LORD EDWARD GROSVENOR, still radiant, wound up t proceedings by thanking the audience for the interest th had displayed. It had been suggested that his squadron (N 601) was not succeeding in attracting men. He assured the that the men were coming along quite nicely and that t Auxiliary Air Force was going to do much better than m people seemed to expect.

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The following opinions of "CIRRUS" owners after some months' running should be of interest:

The De Havilland Aircraft Co., Ltd.,
Stag Lane Aerodrome,
Edgware.

21st December, 1925.

Extract.

"I am sure that you have done extremely well in achieving in such a remarkably short time, the production of an engine which to-day is giving literally no trouble at all."

"There is no doubt that the engine is behaving like one with years of development behind it."

London Aeroplane Club,
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London, W.1.

17th December, 1925.

"I enclose a table showing the flying carried out by the London Aeroplane Club from the 19th August to the 30th November on the two D.H. MOTHS fitted with 27/60 h.p. CIRRUS engines."

"From this table you will see that flying was carried out on 72 days and that 729 flights were made resulting in a total flying time of 298 hours 45 minutes."

"We are extremely satisfied with the performance of the two CIRRUS engines supplied by you in the D.H. MOTHS. The only trouble we have experienced with these engines is with the valve seatings, but the modification you made has entirely corrected it."

"I trust that you will find these figures of interest."

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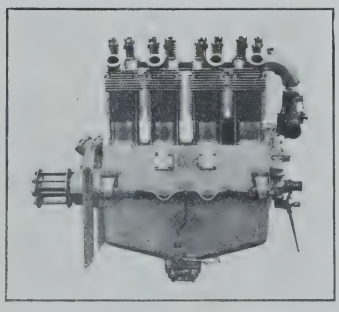
25th November, 1925.

Extract.

"The Cirrus engines fitted to the Machines have proved exceptionally reliable and economical.

The only replacements necessary on the two engines have been two new Cylinder Heads, the Valve Seatings of which were found by the representative of the A.D.C. Aircraft Ltd., when carrying out a modification, to have moved an almost inappreciable amount in the Cylinder Heads. The particular engine in which this very slight defect, which was not noticeable in running, was found had done 49.5 flying hours and 58 hours' total running.

No other replacements whatsoever have been necessary on either engine, although over 100 hrs.' flying has been done."



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THE ROYAL AIR FORCE.

The London Gazette

Jan. 19.

GENERAL BRANCH DUTIES.—The following are granted perm. comns. in the ranks stated (Jan. 1):—FLT. LTS.—H. C. Irwin, A.F.C., A. D. Rogers, A.F.C., W. E. Swann, G. O. Venn. FLG. OFFS.—E. F. Haylock, G. H. Vasse.

A. P. K. Hattersley is granted a S.S. comn. as a Flg. Off. on probation with effect from and with seniority of Jan. 11; Flg. Off. S. T. Kemp is placed on the retired list (Jan. 17); Flg. Off. E. J. Rossiter is placed on the retired list on account of ill-health (Jan. 20).

The following are transferred to the Reserve:—CLASS A.—FLT. LTS.—N. H. Jay (Jan. 18); W. N. Cumming, D.F.C. (Jan. 21). FLG. OFFS.—G. S. Brown, D. H. Geeson, J. de la P. B. Preston (Jan. 15); M. K. McGregor, R. V. D. White (Jan. 18).

CLASS C.—FLG. OFF.—S. T. Tipper (Jan. 17).

The S.S. comn. of Plt. Off. on probation A. C. Foreman is terminated on cessation of duty (Jan. 20); Flg. Off. H. P. F. Fagan (Lt., Som. L.I.) relinquishes his temp. comn. on return to the Army (Jan. 12).

MEDICAL BRANCH.—J. Magner, M.B., is granted a S.S. comn. as a Flg. Off. for three years on the active list, with effect from and with seniority of Jan. 6, 1926.

RESERVE OF AIR FORCE OFFICERS.—E. P. Lash is granted a comn. in Class A.A., General Duties Branch, as a Plt. Off. on probation (Jan. 4), Flg. Off. W. E. Taylor resigns his comn. (Nov. 12, 1925).

Jan. 22.

GENERAL DUTIES BRANCH.—Air Commodore L. F. Blandy, C.B., D.S.O. (Col., Army), is seconded for a further period of service with the R.A.F. (Nov. 30, 1925).

Wing Cdr. G. P. Grenfell, D.S.O., is appointed deputy Director of Research (Instruments), Air Ministry, vice Wing Cdr. James Bevan Bowen, O.B.E. (Jan. 11).

Flg. Off. R. A. P. Roberts is restored to full-pay from half-pay (Jan. 6).

Appointments.

Week ending Jan. 25.

GENERAL DUTIES BRANCH.—Group Captain A. G. Board, C.M.G., D.S.O., to R.A.F. Depot on transfer to Home Estab., 1/1.

Wing Commanders O. T. Boyd, O.B.E., M.C., A.F.C., to R.A.F. Depot whilst attending course at Army Staff College, Camberley, 21/1. A. ap Ellis, C.B.E., to H.Q., Air Defences of Great Britain, for Personnel Staff duties, on transfer to Home Estab., 1/1.

Squadron Leaders A. R. C. Cooper, to R.A.F. Depot on transfer to Home Estab., 9/1. A. D. Pryor, to No. 5 F.T.S., Sealand, 14/1. G. F. Breese, D.S.C., to R.A.F. Depot on transfer to Home Estab., 8/1. R. T. Leather, A.F.C., to R.A.F. Depot on transfer to Home Estab., 24/12. G. S. Trewin, A.F.C., to R.A.F. Depot on transfer to Home Estab., 12/12. K. C. Buss, to R.A.F. Depot on transfer to Home Estab., 27/11.

Flight Lieutenants A. R. Mackenzie, to Station H.Q., Andover, on transfer to Home Estab., 21/1. R. C. Bryant, to Heliopolis Details, Egypt, 21/12. W. E. G. Bryant, M.B.E., to No. 2 Sqdn., Manston, 4/11. W. E. Somervell, A.F.C., to No. 2 Sqdn., Manston, 14/12. A. G. Jones-Williams, M.C., F. L. Luxmoore, D.F.C., and R. V. Bramwell-Davis, to R.A.F. Depot on transfer to Home Estab., 12/12. F. Fernihough, M.C., M. Keegan, O.B.E., M.M., P. E. Gwyer, M.B.E., A. S. Thompson, H. V. Rowley, S. L. Quine, M.C., G. Y. Tyrrell, M.C., R. D. Starley, M.C., and G. Archer, to R.A.F. Depot on transfer to Home Estab., 31/12. R. J. M. De St. Leger and T. Humble, to R.A.F. Depot on transfer to Home Estab., 21/12.

Flying Officers J. H. Hargroves, F. S. Wainscot, J. Bradbury, C. B. McIntyre, E. C. N. Jeffries, R. A. R. Mangles, M. C. W. C. Flint, M.C., and B. R. C. Coope, to R.A.F. Depot on transfer to Home Estab., 21/12. A. M. Reidy, L. E. Dowse, I. M. Morris, H. R. McL. Reid, D.F.C., and T. B. Bruce, M.C., to R.A.F. Depot on transfer to Home Estab., 31/12. F. H. H. Twelvetree, to R.A.F. Depot on transfer to Home Estab., 4/1. R. F. De R. Read, to R.A.F. Depot on transfer to Home Estab., 21/12. H. J. Soper, to M.A.E.E., Felixstowe, on transfer to Home Estab., 12/12. C. C. Clark, to M.T. Repair Depot, Shrewsbury, on transfer to Home Estab., 12/12. G. H. Vasse and S. A. Lane, to R.A.F. Depot on transfer to Home Estab., 12/12. H. A. Bayne, to No. 25 Sqdn., Hawkinge, on transfer to Home Estab., 12/12. J. B. Barrett, to R.A.F. Depot on transfer to Home Estab., 12/12. G. S. Taylor, to Heliopolis Details, Egypt, 21/12. W. F. Warner, to R.A.F. Depot on transfer to Home Estab., 20/12, and to No. 9 Sqdn., Manston, 1/2. J. N. Jaques, to R.A.F. Depot on transfer to Home Estab., 9/1. H. W. R. Banting, to No. 58 Sqdn., Worthy Down, on transfer to Home Estab., 23/1. J. S. Wilkins, to R.A.F. Depot, 22/1. A. Page, to Record Office, Ruislip, 15/1. G. V. Wheatley, to No. 22 Sqdn., Martlesham Heath, 15/2. C. W. S. Chalmers, to R.A.F. Depot, 21/1. C. C. Musselwhite, to remain at No. 5 Sqdn., India, instead of to R.A.F. Depot, as previously notified. G. W. Higgs, to No. 19 Sqdn., Duxford, 28/1. (Hon. Flt. Lt.) P. I. V. Rippon, to R.A.F. Base, Calshot, 19/1. A. W. Crees, to remain at No. 4 Arm. Car Coy., Iraq, instead of to R.A.F. Depot, as previously notified.

Pilot Officers J. G. D. Armour, to No. 111 Sqdn., Duxford, 31/1. The undermentioned Pilot Officers are all posted to No. 4 F.T.S., Egypt, with effect 15/1:—N. J. Anderson, G. M. Beattie, J. E. A. Binnie, T. J. L. Bradley, L. S. T. Brown, N. R. Buckle, W. B. Causer, G. R. T. Clarke, M. A. Cowan, P. H. Danger, A. P. de Woult De Wytt, C. E. Eckersley-Maslin, C. L. Edwards, G. H. Godwin, W. E. W. Grieve, H. R. Hawker, J. E. McC. Henderson, D. J. R. Hylton, H. E. Milton, P. A. Moritz, A. W. H. Nelson, E. G. Oslon, J. H. Pool, A. A. Radclyffe, H. T. A. Silcox, L. M. Timmins, L. S. Tindall, C. Warsow, C. D. G. Welch and F. H. Bailey.

MEDICAL BRANCH.—Squadron Leaders A. J. O. Wigmore, M.B., to R.A.F. British Hospital, Iraq, 13/12. P. T. Rutherford, O.B.E., to Station Commandant, Hinaidi, 13/12. J. M. A. Costello, M.C., M.D., M.Sc., to R.A.F. Depot on transfer to Home Estab., 12/12. G. S. Marshall, O.B.E., D.P.H., D.T.M. and H., to Air Ministry, 15/1.

Flight Lieutenants J. C. Osburne, M.B., to Specialists' Medical Establishment, 13/1. J. A. Musgrave, D.P.H., to R.A.F. Depot on transfer to Home Estab., 31/12. G. R. Nodwell, M.B., and F. K. Wilson, M.B., to R.A.F. Depot on transfer to Home Estab., 12/12. J. R. Crolius, M.B., to R.A.F. Depot on transfer to Home Estab., 20/12.

Flight Lieutenant (Dental) C. T. Hastings, to R.A.F. Depot on transfer to Home Estab., 31/12.

Flying Officers G. J. Hanly, M.B., to No. 27 Sqdn., India, 18/12. B. W. Cross, to No. 28 Sqdn., India, 18/12. J. McC. Kilpatrick, M.B., to No. 60 Sqdn., India, 18/12. C. G. J. Nicolls, M.B., to Aircraft Park, India, 18/12. R. F. G. Dickson, to Aircraft Depot, India, 18/12. C. J. S. O'Malley, to Research Laboratory and M.O.S. of I., Hampstead, for short course, 14/1. R. L. C. Fisher, M.B., and S. S. Proctor, M.B., to R.A.F. Depot on transfer to Home Estab., 12/12. Flying Officers (Q.-Mstr. Medical) W. Gamblen and W. King, to R.A.F. Depot on transfer to Home Estab., 12/12. W. King, to R.A.F. Hospital, Cranwell, 22/1.

STORES BRANCH.—Squadron Leader T. G. Skeats, to R.A.F. Depot on transfer to Home Estab., 31/12.

Flight Lieutenants K. D. G. Collier and L. H. Vernon, to R.A.F. Depot on transfer to Home Estab., 31/12. E. W. Crosbie, to R.A.F. Depot on transfer to Home Estab., 12/12.

Flying Officers E. V. E. Andrewartha, to R.A.F. Depot on transfer to Home Estab., 12/12. C. A. Longhurst, to R.A.F. Depot on transfer to Home Estab., 31/12. W. A. Kyte, to No. 3 Sqdn., Upavon, 13/1. W. B. Frederick, to C.F.S., Upavon, 13/1. Pilot Officer C. P. Marshall, to No. 41 Sqdn., Northolt, 13/1.

ACCOUNTANT BRANCH.—Flight Lieutenant J. C. Brice, to No. 2 F.T.S., Digby, 25/1. Flying Officers J. Freeman-Fowler, W. A. Wadley and C. G. Prior, to R.A.F. Depot on transfer to Home Estab., 12/12.

R.A.F. Awards.

The King has approved of the undermentioned rewards in recognition of gallant and distinguished service in the hinterland of Aden:—

Distinguished Flying Cross to Sq. Ldr. Robert Henry Magnus Spencer Saundby, M.C., A.F.C.

Distinguished Flying Medal to No. 330124 L.-A.C. Ernest Webb.

The Fleet Air Arm.

The Times of Jan. 25 states:—

Attention is drawn by the Admiralty to the provision of arrangements for a few naval officers of the rank of commander to be lent to the Royal Air Force for a short period of service with Air Force Units at home in order to obtain practical experience of the work of the Air Arm in all its aspects. Commanders of seniority of June, 1922, or junior, who are desirous of undergoing the course should forward their names without delay.

Rugby Football.

R.A.F. v. Cambridge University:—Owing to the frozen state of the ground at Cambridge this match was played at the Depôt ground, Uxbridge, on Jan. 20. The result was a win for Cambridge by 6 tries to 1.

In the beginning it looked as if Cambridge were going to have a walk-over. The Air Force were pushed about in the scrum and hopelessly outplayed behind the scrum. Cambridge scored two tries without any difficulty, chiefly due to the speed and fine handling of their three-quarters. The situation was eased somewhat by some good forward rushes in which Flt. Lt. Rose was conspicuous. The Cambridge full-back was forced to touch down twice. The Cambridge backs got the ball again, however, and scored another try.

Just before half-time Flg. Off. Chambers, who played a vigorous game and showed a lot of initiative, scored from a pass from Sq. Ldr. Russell. The Skipper himself did some very hot work at the base of the scrum, but he was not quite speedy enough for Mr. Selby, the opposing half, and some of his passes were a trifle wild in the early part of the game. In defence he was, as usual, worth two or three ordinary players.

The second half found the Air Force better together and on their forward play alone they deserved to score. A Cambridge three-quarter was laid out scoring a try which did not look like a try—and shortly after this the Cambridge scrum-half scored a beauty after a fine run down the wing. The final Cambridge try was a "sitter" the Cambridge forwards dribbling the ball unopposed from the twenty-five. It looked as if the Air Force were waiting for the whistle, and their Skipper's remarks were illuminating and to the point!

But something will have to be done before Feb. 13 about the R.A.F. three-quarter line. Combination among the backs is always a problem in a representative Service side. The Personnel Dept. cannot be brought to see the necessity for posting all likely three-quarters to the same Station and keeping them there for a while, and the present representative three-quarter line is a truly deplorable affair.

Flt. Lt. Bryson, who is probably the best of the four, broke through once or twice during the game, but he dropped every pass that was given to him. Flg. Off. Wilson, at full back, has not improved. He certainly does go down on the ball but he invariably lets the ball bounce and rarely finds touch. The forwards are excellent in every way. They did most of the tackling as well as all the attacking, and after the injury to Mr. Owen, which deprived Cambridge of a forward, they had their own way in the scrums. One was of the opinion that the majority of the Air Force Team were not too fit. The usual silence during place kicking was



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THE AIR DEFEAT AT UXBRIDGE.—A line-out in the Cambridge v. R.A.F. Match at Uxbridge on Jan. 20, when the R.A.F. were defeated by six tries to one. On the extreme left is Flt. Lt. Chick, who leads the R.A.F. pack, and in the foreground Flt. Lt. E. F. Turner (rear ¾ view). In the background are a few of the large number of Depôt personnel who turned out to cheer on the R.A.F.

broken by a chorus of coughing from the R.A.F. line and the whole team seemed much slower than they were in the match against Guy's.

Individual players who showed up, particularly in the second half, included AC. Hampton, who worried the Cambridge wing considerably. He is one of the two representatives of R.A.F. Records at Ruislip, a Unit of less than 200 strength and mainly composed of clerks, a very good show indeed.

The R.A.F. have two more matches before they meet the Navy at Twickenham, and if they are going to put up any sort of a show at all, it behoves them to (in the words of one of their supporters at Uxbridge) "tread on the gas."—C. M. MCA.

The R.A.F. Rugby Cup.

R.A.F., Manston, *v* R.A.F., Eastchurch.—Manston met Eastchurch in the second round of the R.A.F. Rugby Football Cup on Jan. 20, at Manston. The home team won by three placed goals and six tries, 33 points, to one try, 3 points.

The Manston forwards were predominant and got possession on almost every occasion in the scrums and although the handling of the backs was generally poor, the two centres, AC. James (D) and AC. Meagher, were distinctly superior to their opposite numbers from Eastchurch.

The fact that the Manston full back, AC. Sayers, was able to take his place in the three-quarter line on many occasions as well as to attend to his duties at full back, indicates the nature of the game, which was not inspiring at any time.

Tries were scored for Manston by AC. James (D) 2, AC. Walker, 2, AC. Meagher, AC Sayers, AC. Parker and AC. Miles. AC. Blundell scored for Eastchurch

Hockey.

R.A.F. v. Tulse Hill:—Tulse Hill beat the R.A.F at Kent House on Jan. 20 by 7 goals to 5. Tulse Hill had the better of the first part of the game and at half-time were leading by 3 goals to 1.

Early in the second half some good passing by the forwards enabled Tulse Hill to increase their lead to 6 goals. The R.A.F. rallied and scored three goals in rapid succession. In the last few moments of the game, Flg. Off. Bingham-Hall scored a third goal. The Air Force team were :—

Flt. Lt. Betts (Uxbridge), goal; Flt. Lt. F. J. Murphy (Halton), and AC.2. Beck (Worthydown), backs; Flg. Off. A. M. Cook (Cranwell), Flg. Off. H. S. Davidson (Duxford), and Sq. Ldr. L. C. Keeble (Henlow), half-backs; Plt. Off. A. C. Sharp (Farnborough), Flg. Off. V. B. Bingham-Hall (Farnborough), Flt. Lt. C. G. Wigglesworth (Calshot), Plt. Off. R. E. Hall (Duxford), and Flt. Lt. H. N. Hampton (Uxbridge), forwards.

Fencing.

The R.A.F. Fencing Union won the sabre event, halved the épée event and lost the foil event in a fencing match at Bertrand's Fencing Academy on Jan. 22 against the home Salle. The results were :—

Foil.—R.A.F. : Sq. Ldr. F. G. Sherriff, 1 victory, 2 defeats; Cpl. W. R. Hancock, 1 victory, 2 defeats; S-M. E. J. Bradbury, 3 defeats.

Bertrand's : J. A. Obdam, 2 victories, 1 defeat; B. Cederin, 2 victories, 1 defeat; Signor G. Mazzetti, 3 victories.

Epee.—R.A.F. : Sq. Ldr. F. G. Sherriff, 2 victories, 1 defeat; Flt. Lt. A. F. Ingram, 1 victory, 1 double hit, 1 defeat; S-M. Bradbury, 1 victory, 2 defeats.

Bertrand's : T. G. Beddard, 1 victory, 1 double hit, 1 defeat; D. D. Drury, 2 victories, 1 defeat; A. James, 1 victory, 2 defeats.

Sabre.—R.A.F. : Sq. Ldr. F. G. Sherriff, 2 victories, 1 defeat; Flg. Off. E. H. Blake, 1 victory, 2 defeats; Cpl. Hancock, 2 victories, 1 defeat.

Bertrand's : Signor G. Mazzetti, 2 victories, 1 defeat; J. A. Obdam, 1 victory, 2 defeats; C. Lynfield, 1 victory, 2 defeats.

THE BRITANNIA TROPHY.

The Committee of the Royal Aero Club will consider the award of the Britannia Trophy for the year 1925 at its meeting in February.

The Britannia Trophy, which was presented to the R.Ae.C. in 1913 by Mr. H. C. Barber, is awarded each year "to the British Aviator who, in the opinion of the Committee of the Royal Aero Club, shall have accomplished the most meritorious performance in the air during the year."

The Royal Aero Club will be glad to receive particulars of any meritorious performances for consideration by the Committee when making the award. Particulars should be addressed to the Secretary, Royal Aero Club, 3, Clifford Street, London, W.1, not later than Feb. 15, 1926.

[The outstanding performances of the year would seem to be Mr. F. L. Barnard's high-speed flight in dense fog on the first day of the King's Cup Race, and Flt. Lt. (now Sq. Ldr.) Booth's handling of the R.33 when she broke away in a gale. On the other hand consideration might be given to the claims of the "joy-ride" pilot who has carried most passengers during the year, thus doing valuable work in popularising aviation. Or the test flying done by Mr. Courtney might be considered.—Ed.]

THE FLIGHT TOWARDS THE CAPE.

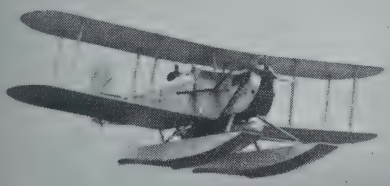
Mr. Alan Cobham, Mr. A. B. Elliott and Mr. Emmott arrived on Jan. 23 at Broken Hill, in Northern Rhodesia. He had left Ndola at 09.25 hrs., and reached Broken Hill at 10.42 hrs. According to *The Times* he had expected to be held up at Ndola as benzol supplies from Beira could not be got through owing to the floods, but the difficulty due to lack of fuel was overcome.

OMISSIONS.

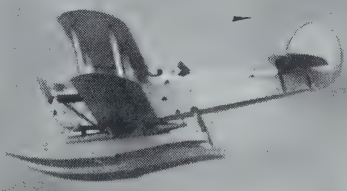
Owing to pressure on space further articles on "Progress in 1925" and on "The Economics of Air Transport" have been unavoidably held over.

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YORKSHIRE'S TURN.

The people of the North Country have the habit of doing things well. And their habit of hospitality corresponds. They do unto others as they would be done by. So when The Yorkshire Aeroplane Club suddenly emerged from the Secret List and sent a telegram bidding one to attend its opening ceremony on Wednesday, Jan. 20, one stood not upon the order of one's going but went.

One went by the first reasonable train from London, at 09.00 hours, arriving at Leeds at 13.19 hours, for a lunch timed to start at 13.15 hours, which one judged by Southron standards would begin at 13.30 hours. And when one entered the room at 13.25, behold the lunch was already well under way. They are a punctual people these Leeds kindly lights.

Also to save time, having an eye to the axiom that time is money, instead of feeding solidly for an hour and then talking for an hour and a-half and saying nothing, as is the habit of the public lunch Modock, the Chairman, Mr. John Arnott, Lord Mayor of Leeds, proposed the King with the fish, Sir Charles Wilson spoke with the *poularde en casserole*, and Sir Sefton Brancker discoursed over the *pêche Melba*, having at any rate the satisfaction of knowing that what was on his plate would not grow colder while he spoke. The whole show was over before 14.30 hours, and everyone who spoke really said something.

Sir Charles Wilson emphasised the need for expanding the commercial side of aviation, without which flying could not attain success. Supposing, he said, he suggested to the Leeds City Council that they should have a municipal aerodrome, the first thing he would be asked was what was going on, and he would have to prove his case. Many things were possible if they worked from a commercial point of view.

It was not their intention to let flying die in this country. He knew France had a big air fleet and so had America. We must have one too. And the men who flew should have every opportunity.

He himself was interested in flying, for his son, who had died, took his Brevêt on a Bristol box-kite on Dec. 14, 1914. Our flying in this country must be top hole, for flying was not a pastime, it was a national necessity.

Sir Sefton Brancker, representing the Air Ministry and the Royal Aero Club, had apparently arrived in good time for the lunch, having caught the 07.00 train from Town by the simple process of not going to bed. He expressed his gratitude to Yorkshire for what it had done for Aviation. Leeds had given the pioneer firm of Blackburn to the Industry and Harrogate had done much for sporting flying.

He pointed out that the Government was helping Civil Aviation. Despite ill-informed newspaper critics, the regulations, including such things as airworthiness certificates, inspections, licences for pilots and ground engineers, were in the interests of safety. But he would like to hear genuine complaints.

There was no militarism about the Light Aeroplane Clubs, he pointed out. They only offered slight advantages to pilots wishing to join the R.A.F. Auxiliary Force. Aviation could do much more commercially than in a military sense.

There was little incentive to fly in England. Our weather was bad and our railways were good. But there was plenty of room for flying abroad.

He understood that the Yorkshire Club had already 250 members. He warned them not to be impatient about getting their turn for instruction. He wanted "Self Help" to be their motto, and here, he remarked, they owed a debt of gratitude to Mr. Hay for letting them have the Sherburn Aerodrome on reasonable terms.

They must study finance, and pay their own way without Government support. They must get the important people of the neighbourhood interested. Then in time the Aircraft Industry would rival the Shipbuilding Industry, for we could not afford to let the French, Germans, and Americans carry our passengers and mails, and we must have British aeroplanes with British crews flying all over the World.

Professor Brodetsky, of Leeds University, Chairman of the Committee of the Club, thanking Sir Sefton for being present, said that no area had so big a population so intimately concerned with engineering as the West Riding of Yorkshire. So they hoped to rival Lancashire in the development of Aviation.

Mr. David Little also expressed the Club's gratitude to Sir Sefton, and proposed the health of the Lord Mayor.

The Lord Mayor in responding, apologised for making people make speeches during eating and pointed out that they had to save time in these short Winter days.

Thereafter one was transported in luxury, with Mrs. Little, Sir Sefton Brancker, and Mr. Lillie, to the Club's aerodrome at Sherburn-in-Elmet, by Mr. David Little Junior, who is another of the moving spirits of the Club. "D. D." Little, to distinguish him from his distinguished father, has the makings of a fine pilot, if one's experience of car-driving is any criterion. He has fine judgment of speed and distance, and excellent hands, and the right engineering instinct for an aviator.

Sherburn is an old R.F.C. aerodrome some twelve miles from Leeds, on the East of the Great North Road. Why and what Elmet is, one did not gather. The aerodrome is ideal so far as surface and surroundings are concerned. And it is easy to reach by car, as the road is good and wide and open. But it will be rather un-get-at-able for those who have to go by train. Still, if the members are as enthusiastic as are those of the Lancashire and Newcastle Clubs, something may be done in the way of chartering motor-busses.

In spite of heavy snow on the roads, and consequently slowed speed, the whole party from Leeds, and the total population of Sherburn-in-Elmet, down to the latest-born infant, were assembled on the tarmac by the sheds in time for Sir Sefton Brancker to declare the aerodrome open—at 15.15 hours instead of the scheduled 15.00 hours. And immediately afterwards Mr. West, late R.A.F., the Club's pilot, took out the Club's first De Havilland Moth and made the inaugural flight.

Mr. West had never flown a Moth before, and he took off in a cautious way which gave one great confidence in his reliability as an instructor and passenger-carrier. After a few turns he got the hang of the thing, and made a beautiful three-point landing. Then he took up the Lady Mayoress, Mrs. Arnott, as the Club's first passenger. And afterwards he took up Miss Woodhead, the Club's first woman member, who will be among the first batch of members to go into training as a pilot.

One was glad to see among those present quite a number of the old-timers of Aviation. Brig.-General Francis Festing, beloved of the old R.F.C., was there, as large as life. Mr. Norman Blackburn had flown over from Brough on a school Avro, still piloting as well as in the old R.N.A.S. days, Mr. Reginald Kenworthy was there with Mrs. Kenworthy, Mr. Stuart Hurst, perhaps with an eye to an increased market for Zam-Buk among light aeroplane casualties, was there with Mrs. Hurst, Mr. Oldroyd, of the North Sea, etc., Navigation Co., was there.

Altogether it was a happy if cold gathering on that snow-covered aerodrome. And Mr. J. P. Barnes, the Secretary, deserves every congratulation on his inaugural effort. If only he and the Committee can induce the moneyed interests of Yorkshire to provide a few extra aeroplanes, as the moneyed people of Manchester have done, or have promised to do, there ought to be very pretty rivalry between the Red Rose of Lancaster and the White Rose of York.—C. G. G.

The London Aeroplane Club.

Flying was only possible on three days during the past week. The total flying time was 12 hrs. 10 mins.

Owing to the recent accident to G-EBLU only one machine was available and the pilot instructor, G. T. Witcombe, was given very little rest. On Sunday there was a large booking and Mr. Witcombe on that day alone made fifteen flights with members.

The following members had flying instruction:—G Quirk, V. H. Doree, C. G. Murrell, O. R. Ogston, E. S. Brough, R. V. Banks, H. O. Richardson, T. W Eadv, D. Kittell, B. B. Tucker, W. Hay, K. V. Wright, H. R. Thomas, P. Johnson, R. P. Cooper, Miss O'Brien, R. C. Brighten, G. Wallcousins, R. L. Preston, N. Jones, G. W. Howe, H R. Presland.

The folowing members flew solo:—Mrs. Eliott-Lynn, P. G. Lucas, G. N. Warwick, G. H. Craig.

The dance at the Suffolk Galleries on Jan. 13 resulted in a sum of nearly £40 being raised for the fitting out of a Members' Shed at the Aerodrome.

The Lancashire Aero Club.

Flying took place on Wednesday and Sunday only.

Mr. Cantrill and Mr. Scholes gave "dual" instruction to: H. Jowett (35 mins.), P. Michelson (30 mins.), A. Goodyear (25 mins.), H. Stern (40 mins.), R. Williams (1 hr.), J. Leeming (1 hr. 40 mins.), A. Macnair (30 mins.), F. Davison (35 mins.), M. Lacayo (30 mins.), and T. Wilkinson (20 mins.).

Tests occupied 30 mins. Ten pupils had instruction. The total time flown was 7 hrs. 15 mins.

A Special Sub-Committee is to be appointed to deal with the question of the garments worn by Mr. Goodfellow who on Sunday far outclassed even Mr. Stern at his best. It is believed that the Hall Porter of a certain hotel at Hythe, is to be approached with a view to him making his well-known remark, "You can't do that ere 'ere!" A member of the Club to whom this remark was addressed with some frequency during the last Lympne Meeting is strongly in favour of trying this remedy.

The Newcastle-upon-Tyne Aero Club.

Report for week ending Jan. 24:—The weather has been against flying again this week, and the Club is still hampered, when the weather is good, by having only one machine in service No flying was possible at all on Thursday and Saturday, but a total of 12 hrs. 38 mins. was accomplished, all on I.X.

Dual Instruction with Major Packman:—Miss C. R. Leathart has the largest total for the week, with four flights, totalling 2 hrs. 10 mins. Mr. A. E. George (30 mins.), Mr. A. J. Somerville (35 mins.), A. Bell (15 mins.).

Secondary Dual:—Mr. Irving (1 hr. 30 mins.), Mr. R. N. Thompson (1 hr.).

Solo:—Mr. Stobie (30 mins.). Mr. Heppell, four flights, totalling

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1 hr. 18 mins., with the following as passengers: Mrs. Lucas, Mr. Herdman, Mr. Stanley and Mr. Ogden. Mr. R. N. Thompson (15 mins.). Mr. W. Baxter Ellis 59 mins. solo and 20 mins. with Major Packman as pilot while he took cinematograph pictures. Mr. N. S. Todd one solo of 15 mins., and three flights with passengers, Mr. W. Todd, Mr. W. Robson and Mr. J. Gibson, a further 32 mins. Mr. Walton carried out his height tests on Tuesday, remaining up for 2 hrs.

Major Packman took Miss Drummond for a 15 mins.' flight on Wednesday. Instructor's tests occupied 10 mins.

Mr. R. N. Thompson received his Royal Aero Club Certificates during the week. Most of the pilots and pupils of the Club will seriously study, during the forthcoming week, the Notes on "Safe Flying," by Capt. de Havilland.

The members of the Club have been very kindly invited by the Directors of Armstrong, Whitworth and Co., Ltd., to attend two of their Lectures. The first, on Wednesday, Jan. 27, by F. M. Green, O.B.E., Inst. C.E., F.R.Ae.S., on "Aeroplanes of the Past, Present and Future," and the second, on Feb. 17, by Mr. L. S. Swinnerton Dyer, A.M.I.M.E., entitled, "Tanks and Dragons with the Army Manœuvres, 1925."

AVIATION IN AUSTRALIA.

The appointment of H.E. Lord Stonehaven to be Governor-General of the Commonwealth of Australia is expected to give a much-needed stimulus to Aviation in Australia.

Before his elevation to the Peerage Lord Stonehaven was Major John Lawrence Baird, C.M.G., D.S.O., M.P., and was a qualified aviator. In 1916 he was appointed Vice-President of the Air Council, and later, with the formation of the Royal Air Force, became Under-Secretary of State for Air.

In May, 1917, he was made chairman of the Civil Aerial Transport Committee, and remained in that capacity until it terminated some months after the Armistice.

His Excellency has intimated in no uncertain terms that the development of aviation in Australia is a subject which enjoys his close interest. Furthermore it is known that a special D.H.50 is being built and fitted up for his own personal use, so that it is possible that he will watch the progress of aviation from the air, the ideal viewpoint. Attached to his staff is Flt. Lt. A. P. Davidson, R.A.F.

The machine which will be used is now approaching completion at the de Havilland Aircraft Company Ltd. Works at Stag Lane. It is a De Havilland 50, fitted with a 240 h.p. "Puma" engine.

A feature of the machine (which has been ordered by the Australian Air Board) is its interchangeable undercarriage. It is the work of an hour or so to convert it to a seaplane with floats, so that, should a coastal journey be contemplated, the machine would fly as a seaplane, while for overland trips it will be used as an ordinary aeroplane.

The R.A.A.F. Estimates for 1925-6 show a total vote of £434,944 as against £405,004 voted for 1924-25, thereby showing an increase of £28,000.

In the Civil Aviation estimates for 1925-26 the most encouraging feature is the grant of £83,800 under the heading "Development of Civil Aviation" (which includes purchase of aircraft and subsidising of air lines), this being an increase of £37,714 over last year's allocation.

The total vote of £98,775 shows an increase of £42,923 over last year's appropriations.

Most of the extra money, as is the case with the R.A.A.F., comes out of the Special Defence Provision of £1,000,000 "to cover the developmental programme in the provision of the increased personnel, arms, armament, munitions, aircraft, equipment, storage, and other accommodation and for the general development of the Defences of the Commonwealth."

Of the present year's provision, practically one-tenth (£97,216) goes to the R.A.A.F., and Civil Aviation's share is £36,000 in addition.

The Controller of Civil Aviation has submitted to the Minister of Defence a strong recommendation that the Government should assist the formation of light aeroplane club sections of the Australian Aero Club, in Melbourne, Sydney and Brisbane. The scheme follows the lines of the British Light Aeroplane Clubs throughout.

This has been adopted by the Minister of Defence, and an order for four D.H. Moths has been placed which on delivery will be loaned to the Australian Aero Club for use in Melbourne and Sydney.

On Nov. 28, 1925, the first D.H. Moth to be seen in Australia was demonstrated at Essendon aerodrome, Melbourne, under the auspices of the Australian Aero Club, Victoria section. This machine was purchased by the Civil Aviation Branch for demonstration purposes in various parts of Australia.

Some time during November, 1925, Flt. Lts. McIntyre and Hempel, R.A.A.F., piloting two Fairey III D. seaplanes and carrying Captain Johnson, Superintendent of Civil Aerodromes, as passenger, flew from Melbourne to Hobart and back. The report of the flight has not yet been made available, and, although the flight gives rise to the possibility of a Melbourne-Tasmania air route, there can be little possibility of such a service during the current financial year; even if suitable bases could be established and appropriate seaplanes or flying boats procured.

There is doubt whether suitable bases could be found not only in the tempestuous Bass Straits, but also at the Melbourne end, to which the approach is not particularly good.

The following extract from *The Commonwealth Gazette* gives the disposition of the Staff of the Royal Australian Air Force following on the reorganisation of the R.A.A.F. as from July 1, 1925.

Chief of the Air Staff:—Group Captain R. Williams, D.S.O., O.B.E., p.s.a., A.D.C. to H.E. the Governor-General.

Second Air Member:—Wing Cdr. W. H. Anderson, D.F.C. (C.O. No. 1, F.T.S.), (acting as second Air Member during the absence of Wing. Cdr. Goble, D.S.O., C.B.E., D.S.C., A.F.C., attending R.A.F. Staff College).

Director of Medical Services (D.M.S.):—Sq. Ldr. A. E. Lawrence, M.C. (Flt. Lt. G. F. Cherry to act during Sq. Ldr. Lawrence's absence in England).

Director of Supply and Research (D.S. and R.):—Sq. Ldr. L. J. Wackett, R.F.C., A.F.C. (temporarily commanding Experimental Section).

Director of Personnel and Training (D.P. and T.):—Sq. Ldr. A. T. Cole, M.C., D.F.C.

Director of Training (D.T.):—Flt. Lt. J. H. Summers.

Director of Operations and Intelligence (D.O.I.):—Sq. Ldr. R. M. Drummond, D.S.O., O.B.E., M.C., R.A.F.

Director of Organisation and Staff Duties (D.O.S.D.):—Sq. Ldr. H. N. Wrigley, D.F.C., A.F.C.

Director of Air Force Works and Buildings (D.W.B.):—Flt. Lt. Hepburn, D.F.C.

Director of Technical Services (D.T.S.):—Flt. Lt. H. C. Harrison.

Director of Personal Services (D.P.S.):—Flg. Off. U. E. Ewart.

Director of Equipment (and to act as D.S. and R. during Sq. Ldr. Wackett's absence in N.S.W.):—Sq. Ldr. P. E. McBain, M.B.E.; E.1, Sq. Ldr. T. R. Marsden, D.S.O. E.2, Flt. Lt. C. S. Harman, M.S.M.; A.1, Flg. Off. W. E. Cowper.

Liaison Officer, Air Ministry, London:—Sq. Ldr. R. S. Brown, A.F.C.

A GUIDE TO THE AIRWAYS.

["A Commercial and Historical Atlas of the World's Airways," published by Francis J. Field Ltd., of 57-58, New Street, Birmingham, England, at 2s. 6d. nett.]

An exceedingly interesting and informative book dealing adequately with the air routes of the World has been compiled by Francis J. Field Ltd. Sir Sefton Brancker in a foreword places his benediction on the work.

The first half is confined to historical and other data. In this part the main objects of Civil Aviation are fully described, and there is an interesting article by Mr. Arthur Newman of the British Aviation Insurance Group, in which he deals fully with the subject of insurance and points out how by means of insurance aviation has been made commercial.

There are articles on the forwarding of goods by air and on how to use the air mails with full details as to times of posting and cost.

Lists of air stamps and labels with directions as how to mark a letter sent by air mail are also given.

Some of the longest flights made by each country are tabulated, and this makes very good reading. Possibly the most interesting two pages of the book are those which deal with the Balloon Posts of Paris. When Paris was invested by the Prussians in 1870-71 it was essential that the capital should be in touch with the provinces. Free balloons carrying passengers, messages, newspapers, pigeons and dogs were sent out over the lines and the pigeons were used for returning the messages. A list of the flights with a map is of very distinct interest.

The second half deals fully and adequately with the commercial history and present commercial air facilities of all the countries in the World. So far as one can make out there are no sins of commission in this although there are one or two sins of omission which will no doubt be corrected in future issues. These sins of omission are doubtless due to the fact that those concerned failed to supply complete information to the publishers of the book and for this they only have themselves to thank. This section is fully illustrated with maps showing the air routes projected, suspended, defunct or in operation.

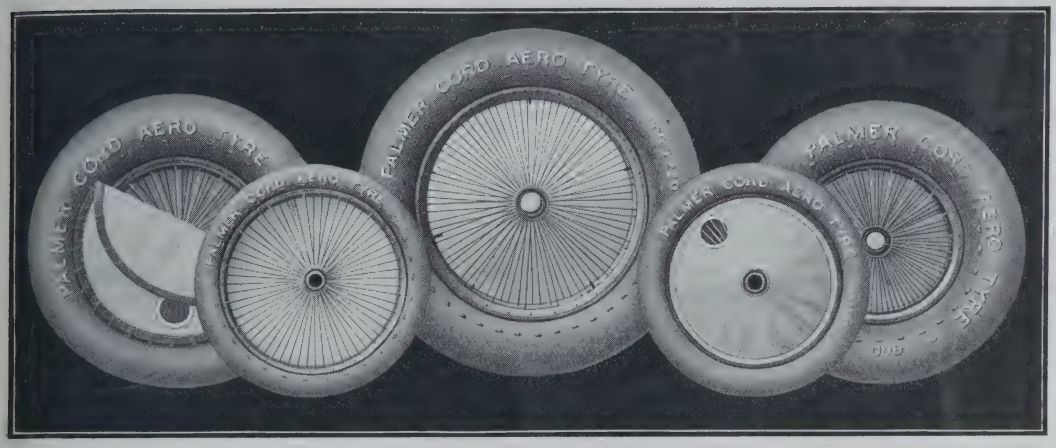
The book should be in the hands of all commercial firms who are in any way commercial.

SPAIN—SOUTH AMERICA.

On Jan. 26, Major Franco and Capt. Ruiz de Alva, both of the Spanish Army, Lieut. Duran, of the Spanish Navy, and a mechanic, left Palos de Moguer at 08.00 hrs. for Buenos Aires. They are using a Dornier Wal flying boat fitted with two 450 h.p. Napier Lion engines. At 15.00 hours the same day they arrived at Las Palmas, Canary Isles, a distance of 812 miles.

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		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	179	178.	55.	132/46	1000×180	148	220.	80.	Central
300×60	16	111.12	25.4	Central	650×125	119	178.	55.	132/46	,,	149	185.	55.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	155	220.	66.67	Central
,,	172	130.	38.09	Central	,,	188	120.	34.92	Central	,,	166	185.	55.	125/60
575×60	21	160.	28.	Central	750×125	77	178.	44.45	132/46	900×200	107	185.	55.	Central
,,	186	120.	34.92	Central	,,	92	185.	55.	135/50	,,	108	185.	55.	125/60
,,	190	150.	38.09	Central	,,	95	185.	55.	Central	,,	128	220.	66.67	Central
650×65	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	,,	137	250.	80.	Central
,,	79	178.	44.45	Central	,,	112	150.	38.09	Central	,,	157	185.	80.	Central
,,	100	178.	38.09	132/46	,,	176	178.	44.45	Central	,,	202	185.	60.32	Central
,,	101	178.	31.75	132 46	,,	179	178.	55.	132/46					
600×75	21	160.	28.	Central	800×150	161*	185.	55.	135/50	1100×220	134	220.	66.67	Central
,,	186	120.	34.92	Central	,,	162*	185.	55.	Central	,,	136	250.	80.	Central
,,	190	150.	38.09	Central	,,	163*	185.	66.67	135/50					
700×75	78	178.	44.45	132/46	,,	169†	185.	55.	135/50	975×225	192	185.	60.32	Central
,,	79	178.	44.45	Central	,,	177	185.	55.	135/50					
,,	100	178.	38 09	132 46	,,	183	185.	55.	Central	1250×250	133	250.	80.	Central
,,	101	178.	31.75	132/46	,,	211*	185.	60.32	135/50	,,	154	304.8	101.6	Central
700×100	77	178.	44.45	132/46	1000×150	167	185.	55.	125/60					
,,	92	185.	55.	135/50	,,	174	250.	80.	Central	1500×300	115	304.8	101.6	Central
,,	95	185.	55.	Central	,,	182	185.	55.	Central	,,	126	304.8	152.4	Central
,,	99	178.	38.89	132/46	,,	187	220.	66.67	Central					
,,	112	150.	38 09	Central	,,	201	185.	60.32	125/60	1750×300	139	400.	152.4	Central
,,	176	178.	44.45	Central	,,	210	185.	60.32	Central	,,	191	350.	150.3	Central

*Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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UIND (343)

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 9; Tuesday, 4; Wednesday, 15; Thursday, 5; Friday, 9; Saturday, 8; Sunday, 3.

Imperial Airways Ltd.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 38, passengers 78, freight 8 tons.

Air Union:
Paris—London: Machines 8, passengers 21, freight 4 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 6, passengers 10, freight 1¼ tons.

Deutscher Aero Lloyd:
Berlin—Amsterdam—London: Machines 0, passengers 0.

Special Machines: *Private*—Mr. Hamilton to St. Moritz: Machine 1, Passengers 3.

Total number of trips by British Machines, 39, carrying 81 passengers. Foreign Machines, 14, carrying 31 passengers.

Comparative Figures:

Week ending Jan. 24:
Machines, 53; Passengers, 112; Crews, 61; Total personnel, 173

Corresponding week, 1925:
Machines, 41; Passengers, 60; Crews, 54; Total personnel, 73.

Corresponding week, 1924:
Machines, 40; Passengers, 62; Crews, 62; Total personnel, 124.

Corresponding week, 1923:
Machines, 63; Passengers, 131; Crews, 123; Total personnel, 254.

Corresponding week, 1922:
Machines, 13; Passengers, 30; Crews, 20; Total personnel, 50.

Corresponding week, 1921:
Machines, 15; Passengers, 5; Crews, 17; Total personnel, 22.

Croydon Notes.

The air traffic has been operating with remarkable steadiness and regularity for the time of the year. In the old bad days it was quite usual for the number of machines and passengers for a week to drop below ten. Such a thing never happens now, and there is no doubt that things are definitely, if slowly, improving.

Two remarkable night flights have lately been accomplished by Mr. R. H. MacIntosh in a D.H.50. A week or so ago he flew from Paris to London in the dark and in very bad weather with some photographs for a daily paper and again on Sunday night he flew from Brussels with some pictures of the lying-in-state of Cardinal Mercier.

On this occasion he left Brussels at 16.00 hrs. and arrived at Croydon at 19.20 hrs. He had a strong head wind against him for the whole flight. Mr. MacIntosh deserves every credit for this flight. Had it been done by some other pilots the whole world would have known it and there would have been startling stories in the paper of "How I battled against the storm in the darkness of Night."

The Bristol Jupiter Mk. VI still continues to tow the Bloodhound merrily between London and Bristol. Last week Lt.-Col. Minchin made two trips, and Mr. Barnard made six. Lt.-Col. Minichin on one occasion had Sir Sefton Brancker as a passenger. Between Jan. 4 and Jan. 22 the engine had completed 53 hrs. 48 mins. and had covered 5,970 miles. There have been no replacements, except that three sets of sparking plugs have been in use and have been changed as occasion required. The average petrol consumption has been 22.5 gallons per hour.

The Jupiter VI develops 450 h.p. at normal revs., and 485 h.p. at maximum revs. It has a power-weight ratio of 1.49 at maximum revs., and 1.60 at normal revs.

A.D.C. Aircraft Ltd. have been having a busy week with D.H.9as. Every day last week except Saturday Mr. Perry was testing and demonstrating. The new A.D.C. engine, of which there have been many rumours of late, is likely to emerge from the Nimbus clouds of secrecy in the near future. One knows nothing about it except that it is likely to be an engine of a very useful size and may be seen in an air liner of Continental manufacture.—G. D.

Brooklands Notes.

There has not been much activity during this month in the matter of private aviation at Brooklands. Mr. Hamilton's Martinsyde still awaits repair after its forced landing through lack of petrol near Biggin Hill. On Jan. 12, Mr. Hamilton flew his Vickers Vulcan (Rolls-Royce) to Croydon and back. Mr. Preston's B.E.2E. has undergone its modifications for certificate of airworthiness, and will be tested this week. Mr. Dudley Watt's Sopwith Grasshopper, which was, unfortunately, turned over on its back while taxying, is being repaired, and may shortly be seen flying again. Mr. Cobb has ordered an Avro for his private use. Of the commercial firms the Southern Aviation Co. are busy reconditioning Avros, Vickers Ltd. and the Hawker Aviation Co. Ltd., have been doing much test work.

IMPERIAL AIRWAYS.

As was made known some time ago, a new agreement has been arranged between the Air Council and Imperial Airways. The text is published by H.M. Stationery Office as a Parliamentary Paper (Comd. Paper 2754, price 2d.).

The new agreement varies the agreement made in 1924. In an introduction, Sir Samuel Hoare, Secretary of State for Air, states:—

The new Agreement modifies the original agreement by substituting for the minimum annual mileage of one million miles required to qualify for the subsidy a new composite minimum of 425,000,000 "horse-power miles," and also by providing that for the purpose of reckoning this minimum every mile performed by a marine aircraft shall count as a mile and a-half. The Agreement stipulates that the new minimum requirement shall be met each year, without any such arrangement as that contained in the original Agreement for averaging mileage in the earlier years.

The effect of these modifications should be to encourage the employment of more highly powered machines, and consequently to enable the company to develop towards a self-supporting basis as the subsidy decreases. The original mileage requirement was found in practice to put a premium on the employment of the small machine, the mileage of which counted the same for subsidy as that of a more powerful unit, whereas a more promising line of development, if civil air transport is to become economical and efficient, is in the direction of the use of the large high-powered machine.

The alteration as regards marine aircraft is due to the fact that the types hitherto used have been found to have so high a cost of operation in relation to their paying load that there has been insufficient inducement to develop over-sea services. It is considered important to prevent such development from falling into abeyance; over-sea air services, besides being necessary as links on routes which it is hoped to establish, may also prove eventually to have some positive advantages in operation as compared with overland services. The amount of the subsidy and the general provisions of the original Agreement remain unaltered, but the opportunity has been taken to make one or two small formal alterations in its provisions.

THE KARACHI AIR BASE.

The Times of Mesopotamia of Dec. 27 states:—

Details of the plans for the Imperial airship base at Karachi, which will probably be a larger air-port than any in existence at present, are now available.

The base will be situated one mile to the east of Drigh Road railway station and about two miles from the present aircraft depot. It covers approximately 1,000 acres. The shed will be 850 feet long, 170 feet high and 180 feet wide, and in addition a mooring mast 200 feet high is to be erected. This will be provided with a passenger lift and plant for mooring operations. The control machinery will be operated from the observation platform on the top mast.

The mains for fuel, water and hydrogen will run up the mast and enable an airship to be replenished; hydrogen will be made at the outset by the silicol process; later on a permanent type of plant will be installed.

Only temporary accommodation will be supplied for the personnel, numbering about a hundred Europeans and a large number of Indians. The stations, which will be equipped with radio and meteorological sections, is expected to be completed by the beginning of 1927. An idea of the size of the main shed can be gathered by the statement that it will be capable of housing a football match with 30,000 spectators.

AJAX AGAIN.

Under the heading "Wings of Lightning Ridden by New Plane," a New York paper publishes a photograph of the English Electric Co.'s Kingston flying boat. The description imparts the following startling information:—"With gasolene banished from it for ever and its two new 450 h.p. Napier Lyon motors run by electricity, this British seaplane has just completed a satisfactory test flight round England. Its hull is entirely of metal, as wooden hulls have proved leaky, a bad defect."

Everyone will agree that a leaky hull certainly is a bad defect, but allowing this information to leak out together with the news about the new "Electric Napiers" the Air Ministry's Secrecy Department seem to have had a bad lapse.

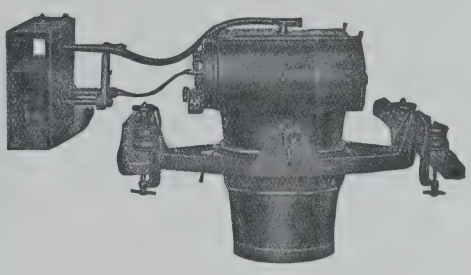
Is it possible that the boat was described to the New York paper as the English Electric (Napier) Kingston?

But where does the lightning come in? Of course Mr. Herne, who, when pilot of the Daimler Airway, used to be such a one with the lightning, is now in America. Possibly that has something to do with it.—G. D.

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AIR NAVIGATION AND ENGINEERING CO. LTD.—(A) Debenture dated Jan. 7, 1926, to secure £4,000, charged on the company's undertaking and property, present and future, including uncalled capital. (B) Also mortgage of even date (as collateral security to above debenture), charged on freehold land with buildings thereon at Addlestone, Surrey. Holder: H. G. Butcher, "Inglethorpe," 2, Broadlands Road, Highgate, Middlesex.

PERSONAL NOTICES.

DEATH.

DAUBENEY.—On Jan. 17, at Eastington, Potgietersrust, N. Transvaal, Ralph Thomas Daubeney, late 3rd (attached 1st) R. West Kent Regt. and R.A.F., only surviving son of the Rev. Giles Daubeney, Herne Vicarage, Kent, aged 28.

MARRIAGE.

O'NEILL—LAING.—At St. Andrew's Chapel, Belford Road, Edinburgh, on Jan. 16, Flt. Lt. Christopher Thomas O'Neill, O.B.E., R.A.F. Medical Service, son of the late John O'Neill, J.P., Sarsfield Court, Riverstown, Glanmire, Co. Cork, to Jane Dorothy, daughter of the late William Laing, Nairn, and of Mrs. Laing, 30, Murrayfield Avenue, Edinburgh.

FORTHCOMING MARRIAGES.

HOLT—DUGDALE.—A marriage has been arranged between Air Commodore Felton Vesey Holt, C.M.G., D.S.O., R.A.F., third son of the late Sir Vesey Holt, of Mount Mascal, and of Lady Holt, of 67, Cadogan Place, and Marion Edith, only daughter of Mr. and Mrs. James Henry Dugdale, of Cadogan Gardens, S.W., and Rowney Priory, Hertfordshire.

LEACROFT—CUDDON.—The engagement is announced between Sq. Ldr. John Leacroft, M.C., R.A.F., son of the late Dr. and Mrs. J. W. Leacroft, of Derby, and Gladys Underhill Cuddon, youngest daughter of the late Mr. G. U. Cuddon, Madras, India, and Mrs. Cuddon.

LUXMOORE—JOHNSTON.—The engagement is announced between Flt. Lt. Francis Logan Luxmoore, D.F.C., R.A.F., younger son of the late Mr. and Mrs. Edward Luxmoore, of Weybridge, and Dorothy Jane, daughter of Mrs. E. Johnston, of Nether Denton, Low Row, Cumberland.

TOWNEND—BEMROSE.—The engagement is announced between John Beverly Townend, R.A.F., eldest son of Mr. and Mrs. William Townend, of Wakefield and Harrogate, and Phyllis Romana, elder daughter of the late Arthur Cade Bemrose and Mrs. Bemrose, of 26, Oakwood Court, Kensington, and Solentia, Yarmouth, Isle of Wight.

BIRTH.

NEWALL.—On Jan. 22, at Mawmead-Shaw, Ashtead, Surrey, to Olive (*née* Foster), wife of Air Commodore C. L. N. Newall, R.A.F.—a daughter.

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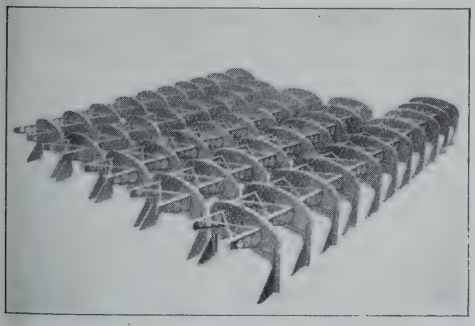
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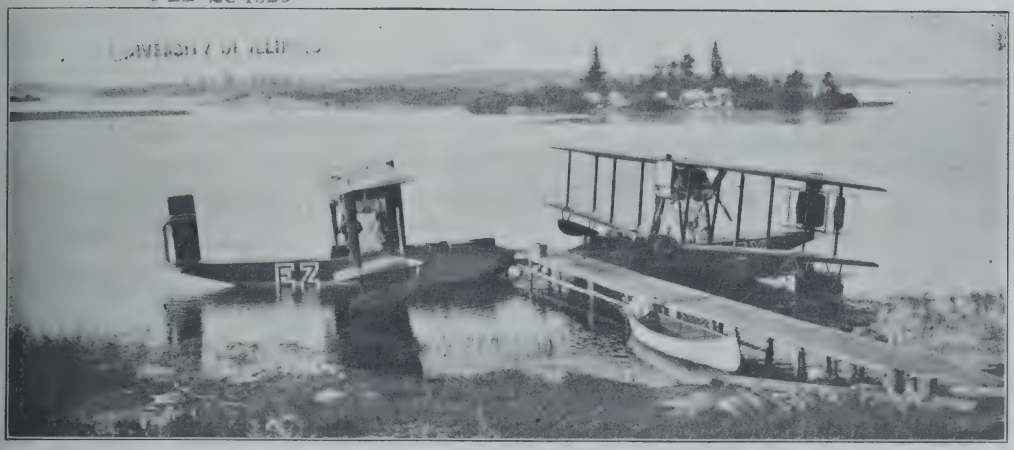
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Edited by C. G. Grey

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THE ROYAL CANADIAN AIR FORCE:—Two Vickers Vikings belonging to the Royal Canadian Air Force, progenitors of the products of Canadian Vickers Ltd., moored off Little Grand Rapids, a Hudson Bay Post at the north end of Lake Winnipeg—photographed by Dr. Alleyn.

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ON AVIATION IN 1925.—III.

PRACTICAL PROGRESS.

So far as actual practical progress during 1925 is concerned, there is not an enormous amount to record. During 1925 certain theories have been put into practice and have proved to be good. But nothing absolutely new has been sprung on the aeronautical community.

Taking technical progress chronologically, out of a series of notes which have been made from the issues of THE AEROPLANE which appeared during 1925, the first matter of importance which appears is the description of the de Havilland Moth. Now there is nothing radically new about the de Havilland Moth, yet it does mark a very distinct step in the progress of practical aviation. There is nothing original about it or its engine. It is a convexion of thoroughly good ideas which have been proved in practice.

Plenty of aeroplanes have flown on 60 h.p. from the year 1908 onwards but none have ever flown so fast with so much load with so little horse power. And none with such loading and horse power have been nicer to fly, though one imagines that the Baby Avro, pre and post war, must be in the same class. Therefore one may safely say that the appearance of the Moth early in 1925 was the first forward step in the progress of practical aviation of that year.

SAFETY FIRST.

The next technical event of 1925 was the "Safety First" demonstration at Croydon on April 22 by Mr. Bulman on a standard 504K Avro fitted with Bristol-Frieze ailerons with Handley Page slots on the leading edge working in conjunction with the ailerons. Mr. Bulman proved conclusively, and in a way which terrified experienced pilots who were ignorant of the qualities of slot control, that an aeroplane may be kept under perfect lateral control and prevented from spinning and nose-diving when it is long past the point where it has lost its lift and is simply sinking.

Here again there was nothing really new. The Handley Page slot was described fully in THE AEROPLANE in 1920 and at intervals ever since one has kept on re-stating one's faith in the Handley Page slot. And we are still without slotted machines either in the Air Force or out of it.

Certainly a number of Air Force aviators who have been killed during the past year might have had their lives saved if their machines had been fitted even with slots for the ailerons, let alone fully slotted wings.

Therefore although the "Safety First" performance did demonstrate practical progress on the experimental side it demonstrated equally conclusively the lack of progress in the design of aeroplanes already in production for the Air Force and for civil use.

There does exist one machine built by the Handley Page Company which has fully slotted leading edges to upper and lower planes and slots working in conjunction with the ailerons independently of the leading edge slots. That machine has been under test by the R.A.F. for some time but does not yet seem to be approved.

Whether it is that the operating mechanism of the slots is not yet perfected or whether it is merely that the aeroplane as such is not a sufficiently good flying machine to be adopted as a standard type or whether it is that the test pilots, being as full of prejudices as experts always are in all sorts of businesses, do not like slotted wings, the fact remains that we have not yet any aeroplanes with slotted wings in regular use anywhere.

Personally one is still convinced that slotted wings, or some development along those lines, are the solution of all our getting off and landing troubles and are the real guarantee of safety in flying. One believes that the Handley Page firm have done all that any firm could be expected to do in the way of spending money on research and experiment and test. The blame for the delay in development along these lines seems to lie entirely with the Air Ministry's experts.

On the same day that Mr. Bulman gave his demonstration with the slotted wings Mr. Fokker on an F.VII demonstrated the non-stalling non-diving quality of his big passenger-carrying monoplane. In his case the effect is produced by using a wing of high lift section in conjunction with adequate



ON THE WAY.—A photograph taken from a Bristol Fighter of Mr. Cobham's D.H.50J flying over Cairo. The photograph is said to be genuine, although it looks very like a fake. It was sent to "The Aeroplane" by Mr. A. B. Elliott, engineer in charge of the flight.

elevator and rudder controls and adequate fin and horizontal stabiliser areas—plus a long fuselage to give them adequate leverage. This also indicated progress in the right direction. But here again Mr. Fokker was only demonstrating facts which he and other competent designers had known for many years previously.

Flying Boats.

In May still further progress was demonstrated by the appearance of an F.5 flying boat with a metal hull built by Short Brothers. Here again there was nothing novel in the idea of a metal hull. But there was a good deal of originality in the design and construction. And the machine was a step in the direction of the abolition of the old heavy unreliable wooden hulls which ought by now to be as obsolete as wooden ships.

Later in the year the Supermarine Southampton, with two Napier Lions, gave proof of general improvement in design. Flying from Scotland to Felixstowe one of them covered over 100 miles with one engine only, turning against the pull of the engine to alight. It is probably the only twin-engined machine (land or water) to fly properly with only one engine.

The Anti-Stall Gear.

The first genuine novelty of 1925 appeared in August when the existence of the Savage-Bramson Anti-Stall Gear was made public for the first time. Various anti-stall gears, dependent on sight or sound to give warning to pilots of the fact that their machines were on the verge of reaching the stalling point, had appeared at various times for several years. But the Savage-Bramson gear, as described at the time, gives the pilot unmistakable warning by direct physical means which cannot be ignored. Consequently no matter how much occupied the pilot's eyes and ears may be he is sure of being told in time that his machine is approaching a dangerous position in the air.

Aeroplanes which cannot be stalled at all can be designed quite easily, but for many manœuvres in the air it is desirable that a machine should be stalled. And it is equally advisable that warning should be given that the stalling point is approaching. There is no doubt that if the Savage-Bramson Anti-Stall Gear were a standard fitting on Service and civilian aeroplanes a very high percentage of accidents, fatal, and non-fatal, would never happen.

Our Speed Machine.

The next step in progress, so far as British aviation was concerned at any rate, was the appearance of the Supermarine Napier S.4 which was built by the Supermarine Company to Mr. R. J. Mitchell's designs to compete for the Schneider Trophy. This machine put up a British speed record for seaplanes of 226 m.p.h., and although it was not good enough to have won the Schneider Trophy contest even if it had escaped accident, it showed quite considerable advance in many points of design over anything which had been produced in this country up to that date. Externally it was very much cleaner than any previous British aeroplane and both in fuselage design and float design it approached more closely to an ideal streamline shape for its particular speed than anything we had done hitherto.

In the same month the newspapers were permitted to illustrate the Fairey Fox, a two-seater fighter and bomber produced by the Fairey Aviation Company Ltd., with a 400 h.p. Curtiss D.12 engine. This machine was not in fact a novelty of 1925 for it had actually been flying since November 1924. But so far as the majority of the people connected with aviation were concerned it was a novelty, even in September 1925.

On test it put up a speed some tens of miles an hour faster than that of our fastest single-seater fighters. Its official performance figures are still hidden by the Air Ministry's Secrecy Department but one gathers that its top speed when properly flown is somewhere between 160 m.p.h. and 180 m.p.h.

It is unnecessary here to record the whole story of the storm which was raised by the enemies of the Air Ministry and by those envious of the Fairey Co. because the Air Staff insisted on ordering a whole squadron of these machines, with American engines, for experimental purposes. It must suffice to say that the Fairey Fox has definitely been of the highest assistance to the progress of British aviation in that it has put every other British aircraft designer on his mettle and has awakened the boards of directors of some firms to the need for an overhaul of their own design staffs, besides introducing new ideas to the Air Ministry itself.

The Auto-Giro.

In October the most surprising aeronautical development of the year, at any rate from the newspaper point of view, appeared. This was the Auto-Giro, designed and constructed by Senor Don Juan de la Cierva, a gentleman of Spain.

The machine was commonly described as a helicopter whereas in fact it is nothing of the kind. It is really a horizontal windmill towed through the air by an ordinary tractor screw.

Because of its novelty and because it does actually fly, a number of quite responsible people with considerable aeronautical knowledge have convinced themselves that the Auto-Giro is in fact going to be the salvation of aviation and the revolutioniser of every form of heavier-than-air flying. Personally one has an absolutely open mind on the subject.

One is prepared to be convinced that the Auto-Giro is a forward step in the progress of aviation. But one still has strong suspicions that everything which the Auto-Giro does can be done by developing the design and operation of slotted wings and tail controls, and that an aeroplane on ordinary lines so developed will always be able to do quite a number of things which the Auto-Giro cannot do. Those are merely one's personal opinions formed without any particular reason. And one is quite open to be convinced that they are wrong.

But, again, the Auto-Giro is nothing new. Senor de la Cierva had been working at it for a number of years. And the machine which appeared at Farnborough was only his latest development of his original idea.

In a General Way.

There is nothing further in the way of technical progress in England to be recorded for 1925.

Lieut. Doolittle, U.S. Army, put the World's seaplane speed record up to 245 m.p.h.

Parachutes, of American design and make, have been adopted and issued to certain units of the R.A.F. And a parachute school has been opened by the Air Force.

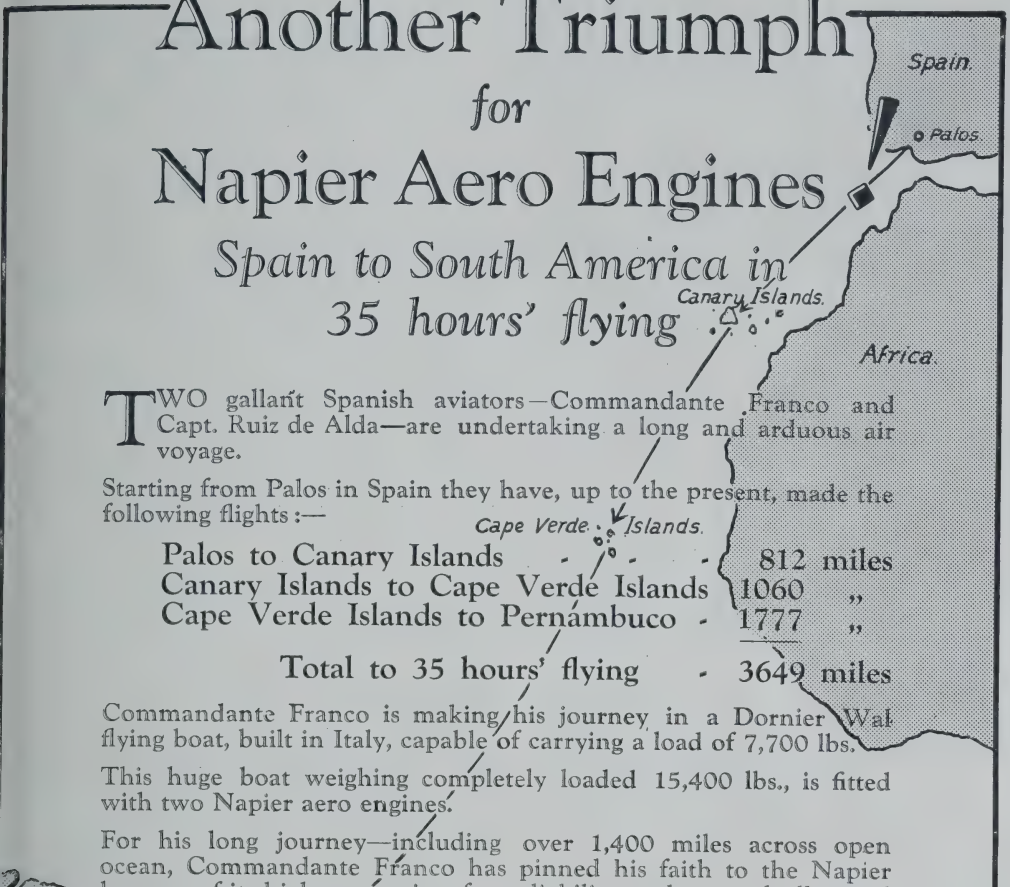
(To be continued.)



AN IMPORTANT ENGINE TEST.—Here is seen the Bristol Bloodhound fitted with the latest 450-485 h.p. Bristol Jupiter, which is flying constantly between Croydon and Bristol to test the performance of the new type under official observation. The Jupiter has already shown itself to be the World's premier air-cooled radial engine of its class. Mr. F. L. Barnard, who with Lt.-Col. Minchin has been flying the Bloodhound on its tests, is seen in the pilot's seat. Up to the present the machine has flown over 9,000 miles since Jan. 4.

Another Triumph *for* Napier Aero Engines

Spain to South America in 35 hours' flying



TWO gallant Spanish aviators—Commandante Franco and Capt. Ruiz de Alda—are undertaking a long and arduous air voyage.

Starting from Palos in Spain they have, up to the present, made the following flights:—

Palos to Canary Islands - - -	812 miles
Canary Islands to Cape Verde Islands	1060 „
Cape Verde Islands to Pernambuco -	1777 „
Total to 35 hours' flying -	3649 miles

Commandante Franco is making his journey in a Dornier Wal flying boat, built in Italy, capable of carrying a load of 7,700 lbs.

This huge boat weighing completely loaded 15,400 lbs., is fitted with two Napier aero engines.

For his long journey—including over 1,400 miles across open ocean, Commandante Franco has pinned his faith to the Napier because of its high reputation for reliability and general all-round efficiency.

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(Water-cooled) Aero Engine

THE FINEST AERO ENGINE IN THE WORLD

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To anyone contemplating the building of new aeroplanes, or of changing the engines in machines at present designed, we will gladly give all possible assistance.

THE AIR ESTIMATE TANGLE.

In writing on the Air Estimates in the last issue of THE AEROPLANE, dated Jan. 27, one fell a victim to one of those perfectly crazy mental inversions from which most people suffer at one time or another—the kind of thing that makes one stand on the accelerator instead of on the brake pedal. The result was that one referred to Appropriations in Aid as being unspent money carried over from the previous year

As a matter of fact the Appropriations in Aid, which increased the 1925-26 Gross Estimates by nearly £6,000,000, were made up of sums contributed by the Admiralty towards the cost of the Fleet Air Arm, by the Middle East Department for the maintenance of the Air Force in Iraq, Palestine and Trans-Jordan, by the Indian Government for the Air Force in India, by receipts from sales of aircraft and stores and by other miscellaneous sources of revenue.

Unspent money is actually returned to the Treasury for the benefit of the Chancellor of the Exchequer. One believes that it can be re-voted. But it so happens that this particular sum of £6,000,000 was not acquired in that way.

Therefore the probability is that Appropriations in Aid from the sources aforementioned will be much the same for 1926-27 as they were for 1925-26. Let us hope that they will be so. For in that event, if the Net Estimate of 15½ millions for 1925-26 is not to be decreased for 1926-27 we may after all have our 21 millions this year.

Nevertheless there is always a possibility that the Admiralty, in its desire to wreck the Air Force, may manage to please the Colwyn Committee by cutting out its appropriation for the Fleet Air Arm and saddle that amount onto the Air Ministry and that the amount may be included in the 15½ millions, or thereabouts, of the Net Estimates. That would in fact be quite a serious reduction

A friendly critic of THE AEROPLANE has pointed out that in his speech at Chelsea Sir Samuel Hoare said, referring to the prospective rise of £5,000,000 for the intended expansion of the Air Force, that he had been able to recommend to the Government a postponement of certain items of expenditure *that would avoid anything like that rise.* From that phrase the critic in question deduces that a rise of some sort is to be expected though nothing like a rise of £5,000,000. Possibly therefore there may actually be a rise of one million.

Of course, half a loaf is always better than no bread, and a rise of one million is better than no rise at all—provided that neither the Admiralty nor any other Government Department plays any tricks with the Appropriations in Aid.

Therefore, as the matter stands, there is on the one hand the possibility that, by a little manipulative book-keeping some of what ought to be Appropriations in Aid may be saddled onto the Air Ministry and included in the Net Estimate which would then appear to show a slight rise on last year's Net Estimate of 15½ millions, although in fact they would be lower. On the other hand there is the possibility that the said Net Estimate may be increased by a million or so, and with the addition of Appropriations in Aid equal to those of last year, may be brought up to something like last year's Gross Estimate of 21¼ millions and perhaps even a little more. Those are the two extremes.

But at the finish the fact remains that we are not going to have the twenty-seven or twenty-eight millions which the Air Ministry ought to have had in order to follow out the scheme of expansion which was laid down three years ago.

Naturally nothing definite is known at the moment. And the whole purpose of the incipient agitation which the Air League is raising is to awaken the British Public to the fact that this country must be the first Air Power in the World. It is also intended to indicate to Members of Parliament that it is their duty to see that our air power is not imperilled for the sake of political expediency.—C. G. G.

ACROSS THE SOUTH ATLANTIC.

On Feb. 1, Major Franco, Captain Ruiz de Alva and a mechanic arrived at Pernambuco, Brazil, from Spain, on a Dornier Wal flying boat, fitted with two 450 h.p. Napier Lion engines in tandem, thus accomplishing the first single machine flight across the Atlantic ocean in a westward direction, and the first non-stop flight across the South Atlantic.

On Jan. 22, they left Palos de Moguer, Spain, at 08.00 hours and arrived at Las Palmas, Canary Islands, at 15.00 hours on the same day. (Palos de Moguer was the port from which Christopher Columbus sailed when he discovered the West Indies, and confirmed the previous discoveries of the American Continent, which hitherto had been kept dark.)

On Jan. 26 they left Gando Bay, Grand Canary, at 08.20 hours, and arrived at the Cape Verde Islands at 19.50 hours.

On Jan. 30 they left the Cape Verde Islands at 08.00 hours and reached Fernando Noronha, an island off the coast of Brazil, where they were forced to descend owing to darkness.

On Jan. 31, at 15.00 hours, they left Fernando Noronha and reached Pernambuco at 19.00 hours.

The total flying time, from Palos de Moguer to Pernambuco, was 34 hours 13 mins. for the 3,585 miles.

It appears that on reaching Fernando Noronha weather conditions were too unfavourable for the direct flight to Pernambuco to be undertaken. The night was dark, with heavy clouds and a rough sea. On alighting it was found to be impossible for the crew to leave the flying boat, and on the following morning, it was discovered that one of the airscrews was damaged.

This damage was not considered serious enough to prevent the flight to Pernambuco from being carried out. But 100 miles from Pernambuco the trouble became serious, and the flight had to be finished on the front engine only.

The flight is particularly noteworthy, and it is satisfactory to be able to record that the British Napier engine, by its faultless running, has once again demonstrated to the World at large that, in spite of powerful foreign competition, British aero-engines can always be relied on to uphold our prestige.

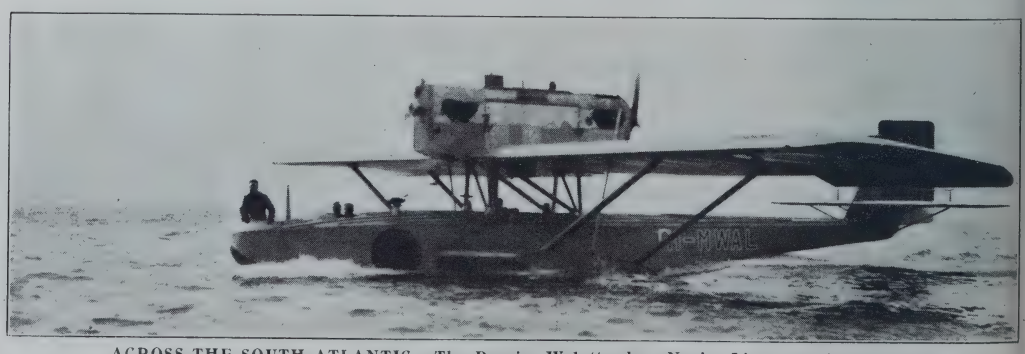
This is the fourth crossing of the Atlantic by aeroplane, and in three of these flights British engines have been used.

In May, 1919, Lieut. Commander A. C. Read, U.S.N., flew from Newfoundland to the Azores and thence to Lisbon, Ferrol and Plymouth, in the seaplane N.C.4.

On June 14-15, 1919, the late Sir John Alcock (then Capt. Alcock) and Lieut. A. Whitten Brown (now Sir A. Whitten Brown), flew from Newfoundland to Clifden, in Ireland, on a Vickers Vimy biplane (two 360 h.p. Rolls-Royce engines).

Between Mar. 30 and June 5, Commander Sacadura Cabral and Rear-Admiral Gago Coutinho, of the Portuguese Navy, flew from Lisbon to Pernambuco on a Fairey seaplane (360 h.p. Rolls-Royce engine). The machine on which they originally left Lisbon was wrecked at St. Paul's Rocks, and a new machine, of a similar make, was sent out for them to continue to Pernambuco.—L. B.

On behalf of all British Aviators one tenders to our Brethren of the Air in Spain the most sincere congratulations on the splendid flight of these officers of the Spanish Army's Royal Air Service. The Navigation of Captain Ruiz de Alva is worthy of those great navigators who four hundred years ago braved the perils of the Spanish Main—as our sailors of the period called the seas of Central and South America which Spain had made her own. And the piloting of Major Franco proves that in the air there still survives that bravery and endurance which enabled the Spanish soldiery to conquer the greater and richer part of the New World.—C. G. G.



ACROSS THE SOUTH ATLANTIC.—**The Dornier Wal (tandem Napier Lions) putting out to sea.**

FAIREY AIRCRAFT

Among the noteworthy achievements of the well-known Fairey Series III Seaplane is the crossing of the South Atlantic by Commander Sacadura-Cabral, who in 1922 flew from Lisbon to Rio de Janeiro, a distance of 4,517 miles, in 62½ flying hours.

THE FIRST CROSSING OF THE SOUTH ATLANTIC.

Thus the Fairey Series III Seaplane, fitted with a Rolls-Royce 'Eagle' IX is the only single-engined type to cross the Atlantic by air.

THE FAIREY AVIATION COMPANY, LTD.,
HAYES, MIDDLESEX.



ACROSS THE SOUTH ATLANTIC.—The Dornier Wal (tandem Napier Lions) at the starting point.

THE SCHNEIDER INTERNATIONAL SEAPLANE CONTEST, 1926.

The Schneider International Seaplane Contest will be held in Norfolk, Virginia, U.S.A., on Oct. 24, 1926. British entries, together with entry fee of £5 and the deposit of £50, must be received by the Royal Aero Club not later than Monday, Mar. 22, 1926.

THE SCHNEIDER TROPHY ENTRIES.

In the notes last week in THE AEROPLANE on Mr. Samuel Saunders' entry for the Schneider Trophy Contest one fact was not made quite clear and that is that Mr. Saunders' venture is purely a private one.

The Air Ministry offered to buy any machine which does over a certain speed (reputed to be 250 m.p.h.), but any machine which is intended to qualify for purchase by the Government must necessarily comply with the specifications and ideas of the Air Ministry's technical experts. Mr. Saunders has decided to build his machines according to his own ideas on the subject of racing aircraft. As he has his own reputation to consider one can be quite certain that his machines will have ample factors of safety.

It is understood that other firms which are considering the building of Schneider machines are prepared to design to Air Ministry specifications. Mr. Saunders therefore will start with the initial advantage of not having to build to anybody's ideas except his own.

Another interesting entry is that of Lt.-Col. W. A. Bristow, who was one of the famous team of Ogilvie and Partners. Col. Bristow at present prefers not to give full details of his design, but it is said to be a monoplane on entirely new lines. If all goes well it ought to be flying about July.

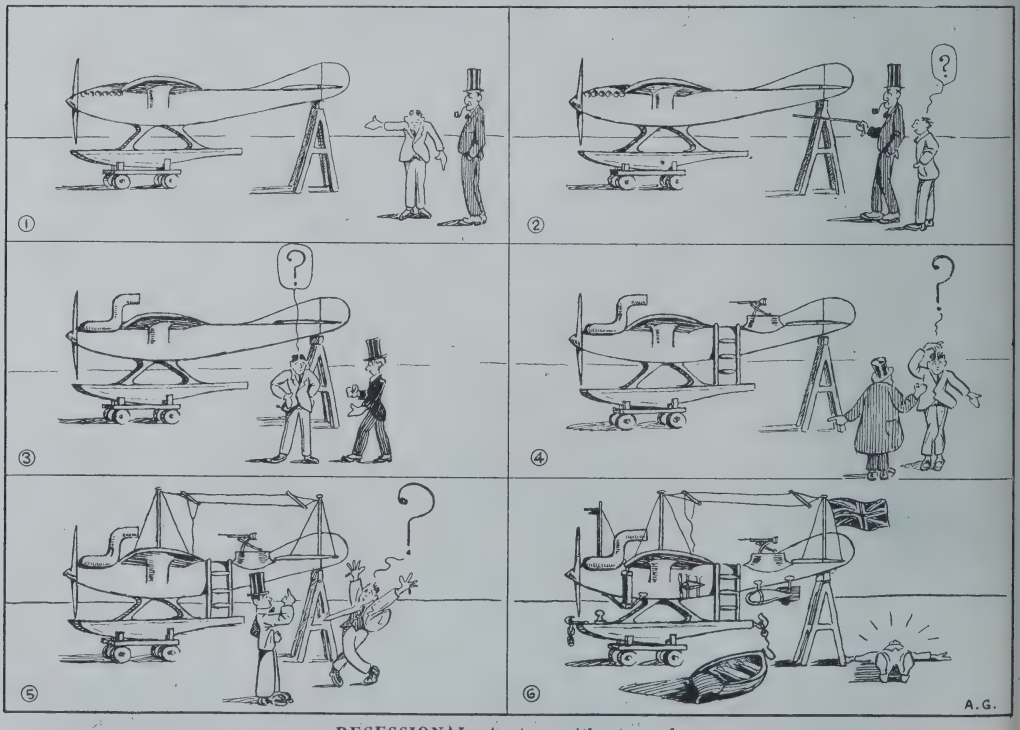
Rumour had it that Col. Bristow was entering a machine of German design and build, but one is assured that the machine is to be of entirely British design and manufacture and driven by a British engine.

What a mistake it would have been to have allowed the race to lapse is shown by the enormous interest taken by the daily press in the announcement, first made in THE AEROPLANE, that Mr. Saunders had decided to enter. Let us hope that there will be none of the silly secrecy which was so irritating last year. There is much interest already in the contest and the more publicity there is the better for British Aviation.

One hears of several other British firms which are now talking of building Schneider Challengers. And there will be at least two French firms building for the contest, either of which might very well produce the winner.

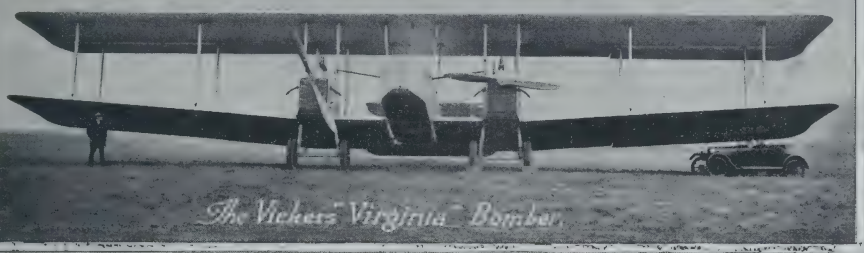
THE GORDON BENNETT BALLOON MATCH, 1926.

British entries for the Gordon Bennett Balloon Match, 1926, together with entry fee, £10, must be received by the Royal Aero Club not later than Monday, Mar. 22, 1926. The Match for the Gordon Bennett Balloon Cup will be held during the month of May. The date will be announced later.



RECESSIONAL—A story without words.

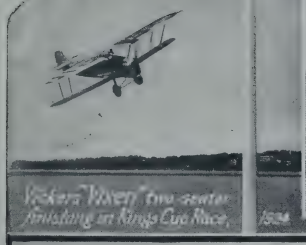
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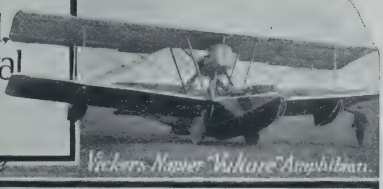
The Vickers "Virginia" Bomber.

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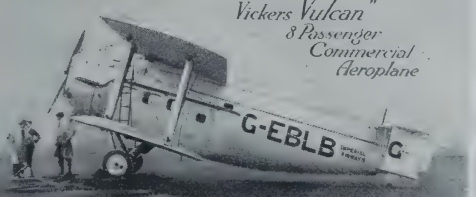


Vickers "Vixen" two-seater finishing at King's Cup Race, 1924.



Vickers Napier "Vulture" Amphibian.

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COLONEL MITCHELL'S SENTENCE MODIFIED.

It is officially admitted that President Coolidge has modified the court-martial sentence passed on Colonel William Mitchell, who was suspended last December for a period of five years for criticising the administration of the American Air Services.

The President has ruled that Colonel Mitchell shall receive half-pay and all his Army allowances during his five years' suspension.

THE AIR LEAGUE IN SCOTLAND.

The Scottish Branch of the Air League of the British Empire, whose Secretary is Mr. J. Buyers Black, 141, Bath Street, Glasgow, has started a very energetic campaign to extend the activities of the League. By way of preparing the ground for his campaign Mr. Buyers Black is publishing a series of pamphlets dealing with aeronautical affairs under the title of "Papers for the People."

The first number of this series deals with the Air League of the British Empire as the Complement of the League of Nations and is by Mr. Buyers Black himself. The author sketches the progress of Aviation and its past and present effect on history. He then suggests that aviation alone can maintain the balance of power in Europe—and that history can be bent to the will of the League of Nations if Great Britain holds a dominating position in the air.

THE ROYAL AERONAUTICAL SOCIETY.

The Royal Aeronautical Society announces that their recent appeal on behalf of the Endowment Fund has already met with generous response. Sir Charles Wakefield has contributed £250 and an anonymous subscriber £100. The Society hopes that this start will be followed up quickly so that it can put in hand the schemes for the supplying of information to the new technical grade of Associate.

In connection with the Endowment Fund Lord Cowdray has offered £50 a year for five years if nine others will follow his example. Mr. Hubert Scott-Paine has promised a like sum.

THE ANNUAL MEETING OF THE R.Ae.C.

The Annual General Meeting of the Members of the Royal Aero Club will be held at 3, Clifford Street, London, W.1, on Wednesday, Mar. 31, 1926, at 6 p.m.

Notices of Motion signed by at least five Members must be received not less than 21 days before the meeting.

Nominations for the Committee, signed by two Members, must be received not less than 14 days before the Meeting.

AMERICAN ENGINE DEVELOPMENT.

On Thursday, Feb. 4, next, Mr. Chas. L. Lawrence, Vice-President and General Manager of the Wright Aeronautical Corporation, Paterson, New Jersey, U.S.A., will read a paper on "American Aircraft Engine Development" before a joint meeting of the Royal Aeronautical Society and the Institution of Automobile Engineers. The meeting takes place at the rooms of the Royal Society of Arts, John Street, Adelphi, at 7.0 p.m. Light refreshments will be served at 6.30 p.m.

Mr. Lawrence has been responsible for much of the progress recently made in the United States in connection with aero-engine design, more particularly in respect of engines of the air-cooled radial type, and has made a special visit to this country in connection with this paper, which is bound to be both interesting and important.

A CENTRAL EUROPEAN SUCCESS.

An announcement has now been made that the negotiations which have been proceeding for some time between the Czecho-Slovak Government and the Aircraft Operating Co. Ltd., of 8, New Square, Lincoln's Inn, with a view to a concession for the organising of air lines from Prague to Trieste and from Prague to Belgrade, are approaching a satisfactory conclusion. Major H. Hemming, Managing Director of the Aircraft Operating Co., has returned to London, having had sympathetic conversations with Doctor Benes, the Czecho-Slovak Foreign Minister, who is a good friend of England.

The scheme has the support of the British Government in securing permission for the air lines to pass over Austrian Yugo-Slav and Italian territory, with possible extensions to Salonika, Athens, and Constantinople. And it is understood that Imperial Airways Ltd. will co-operate cordially with the new lines.

It will be remembered that Mr. Alan Butler, Chairman of the Aircraft Operating Co., opened these negotiations in 1924 when he toured Central Europe on his D.H.37 (Sylvia). Since then affairs have been in the hands of the Company's representative in Prague, Col. Alfred Stead, a son of the famous W. T. Stead who created the *Review of Reviews*. The final decision of the Czecho-Slovak Government will probably be announced about a month hence.

In the meantime seven D.H.50 biplanes are being built under licence by the Aero Company at Prague. These will be used at first for the existing air line between Prague and Bratislava and Kosice in Slovakia. This line will be extended to Uzhorod in Ruthenia with a branch line to Mor Ostrava. And if the new scheme goes through ten more 50as will be put in hand at the Aero Factory.

One hopes that the present negotiations will be brought to a satisfactory conclusion. In any case the greatest credit is due to the Aircraft Operating Co. for the enterprise which it has shown in getting so far, as a purely private concern, with an international scheme which must have far-reaching ramifications.

At any rate there is the satisfactory arrangement for the manufacture of aeroplanes of British design in Czecho-Slovakia. And should the whole scheme go through it will be of great value in giving a short alternative route across central Europe to link up with our Imperial air routes to India and beyond.

Mr. Butler, Major Hemming, and Col. Stead, all deserve to be congratulated on their parts in the affair.—C. G. G.

THE SKYWRITING CORPORATION OF AMERICA.

The Skywriting Corporation of America has signed a contract with the American Tobacco Corporation of America for advertising Lucky Strike cigarettes throughout the State of Florida during January and February of this year.

Sky-writing was introduced into the United States with a Lucky Strike advertising campaign two years ago, since when the entire country, Cuba and portions of Canada, have been covered by sky-writing aircraft in the interests of these cigarettes and other commodities.

An S.E.5 belonging to the Skywriting Corporation of America has been fitted with the Savage-Bramson Anti-Stall gear and recently this machine has been flown to McCook Feld for test by U.S. Army test pilots.



AIR POLITICS IN AUSTRALIA.

Sir Harry Brittain, M.P., a member of the British Empire Press Conference, who is also a director of D. Napier and Son Ltd., did quite a considerable amount of flying during his recent visit to Australia. Here he is seen in flying kit on his arrival at Ehuca, on the borders of New South Wales and Victoria. He was met by the Mayor, who is seen in the centre, together with the Mayor's daughter, two other citizens and two pilots of the R.A.A.F. The machine is a D.H.9 (240 h.p. Puma engine), which still forms part of the equipment of the R.A.A.F.

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AERO ENGINES

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THE FINANCIAL TIMES
on 8th January, 1926

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C.P.

THE ROYAL AIR FORCE.

The London Gazette

Jan. 26.

General Duties Branch.—The following are granted perm. comns. as Flt. Lts., Jan. 1:—B. C. H. Cross, D.F.C., R. J. M. De St. Leger, F. H. E. Reeve.

The following are granted S.S. comns. in the ranks stated, with effect from and with seniority of Jan. 16:—Flg. Off. (for seven years on the Active List)—R. E. H. Horn (Lt., Indian Army, retd.). Plt. Offs. on probation (for five years on the Active List)—C. P. Ashton-Jinks, W. L. Bateman, P. S. Cook, C. H. L. Evans, C. V. Godfrey, F. Gower-Jones, J. A. Grieves, V. G. A. Hatcher, W. A. Hills, V. W. Huggett, C. S. John, H. C. Johnson, C. G. Lucas, D. Mackenzie, A. F. Merritt, D. H. A. C. D. Patton-Bethune, W. M. Phillips, W. J. Pickard, E. G. Searson (Sec. Lt., R.A., T.A.), L. S. S. Tunks, G. A. Underdown, H. J. Walker, W. F. Ward.

Lt. A. R. Braybrooke, K.S.L.I., is granted a temp. comn. as a Flg. Off. on seconding for four years' duty with the R.A.F. (Jan. 16); Plt. Off. G. D. Green is promoted to the rank of Flg. Off. (Aug. 14, 1925); Plt. Off. on probation A. C. Watkins is confirmed in rank (Jan. 18); Flg. Off. B. M. T. S. Leete is transferred to the Reserve, Class A (Jan. 28).

The following relinquish their S.S. comns. on account of ill-health (Jan. 27):—Flg. Off. (hon. Flt. Lt.) C. W. Dann, M.C. (Capt., Indian Army, retd.); Plt. Off. on probation C. Taite.

The following relinquish their temp. comns on return to Army duty:—Flg. Off. A. W. Henderson (Lt., R.A.) (Jan. 16); Flg. Off. T. W. Shortbridge (Lt., Green Howards) (Jan. 19). C. F. L. Holford, Lt., R.M., Flg. Off., R.A.F., relinquishes his temp comn. on return to the R.M. (Jan. 21, 1020).

Stores Branch.—Flg. Off. C. P. Horsfield is confirmed in his appointment in the Stores Branch and is granted a perm. comn. (Jan. 14); Flg. Off. B. W. Hemsley is granted a perm. comn in the rank stated (Jan. 27).

Accountant Branch.—The following Flg. Offs. are granted perm. comns in the rank stated:—F. C. Chalmers, G. W. Lynn (Jan. 27). Plt. Off. on probation A. E. West is confirmed in rank and promoted to the rank of Flg. Off. with effect from Dec. 3, 1925, and with seniority of Nov. 10, 1925.

Medical Branch.—L. I. Hyder is granted a S.S. comn. as a Flg. Off., for three years on the Active List, with effect from and with seniority of Jan. 6; Flg. Off. S. G. Gilmore is promoted to the rank of Flt. Lt. (Jan. 23); Flg. Off. T. Glynn, M.B., is transferred to the Reserve, Class D.2 (Jan. 23).

Reserve of Air Force Officers.—L. R. Tait-Cox is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Jan. 26). The following are granted comns. in Class AA, General Duties Branch, as Plt. Offs. on probation:—W. J. Overy, C. E. F. Riley (Jan. 11); J. R. W. Alexander (Jan. 13).

Flt. Lt. F. F. Minchin, C.B.E., D.S.O., M.C., is promoted to the rank of Sq. Ldr. (Jan. 26). The following Flg. Offs. are promoted to the rank of Flt. Lt. (Jan. 26):—H. Wyllie, O.B.E. (and is granted the honorary rank of Wing Cdr.); R. H. Mayo, O.B.E., H. A. Buss, O.B.E., D.S.C. The following Plt. Offs. are confirmed in their rank (Jan. 21):—L. O. Moss, M.M., H. A. Record.

Auxiliary Air Force.—General Duties Branch.—The following to be Sq. Ldr.:—No. 602 (City of Glasgow) (Bombing) Squadron.—J. D. Latta, M.C., to command the Squadron (Feb.1).

Medical Branch.—The following to be Flt. Lt.:—No. 601 (County of London) (Bombing) Squadron.—J. D. Driberg, O.B.E., M.C., F.R.C.S. (Jan. 26).

Appointments.

Week ending Feb. 1.

General Duties Branch.—Squadron Leader W. W. Hart, M.B.E., to H.Q., Coastal Area, 28/1.

Flight Lieutenants E. L. Ardley, to No. 24 Sqdn., Kenley, 26/1. L. F. Pendred, D.F.C., to C.F.S., Upavon, 22/1. L. Wanless-O'Gowan, to R.A.F. Depot, 4/2. A. M. Blake, A.F.C., to R.A.F. Depot on transfer to Home Estab., 15/1. A. R. M. Rickards, A.F.C., to R.A.F. Depot on transfer to Home Estab., 31/12. W. A. B. Savile, to Air Ministry, 4/2. A. R. M. Rickards, A.F.C, to R.A.F. Cadet College, Cranwell, 1/2. J. Bussey, to H.Q., Inland Area, 2/2.

Flying Officers C. J. Sims, D.F.C., to Reception Depot, West Drayton, 1/2. R. Menzies, to No. 2 Sqdn., Manston, 1/2. C. B. McIntyre, to No. 2 F.T.S., Digby, 1/2. H. R. McL. Reid, D.F.C., to R.A.F. Cadet College, Cranwell, 1/2. W. C. P. Bullock, to H.M.S. *Eagle*, 20/1. J. F. Bythell, to Electrical and Wireless School, Flowerdown, 27/1. J. Noonan, D.S.M., to R.A.F. Cadet College, Cranwell, 19/1. G. Combe, to No. 17 Sqdn., Hawkinge, 3/2. E. H. Alliott, to Electrical and Wireless School, Flowerdown, 25/1. R. Beresford, to Electrical and Wireless School, Flowerdown, 25/1. E. C. Dearth, to R.A.F. Cadet College, Cranwell, 31/1. H. M. Groves, to No. 31 Sqdn., India, 15/1. M. E. B. P. Storrie, to No. 208 Sqdn., Egypt, 15/1. R. E. H. Horn, to No. 2 F.T.S., Digby, on appointment to a S.S. Comn., 16/1. A. R. Braybrook, to No. 2 F.T.S., Digby, on appointment to a Temp. Comn. on being seconded from the Army, 16/1.

Pilot Officers G. E. G. Lywood, to No. 17 Sqdn., Hawkinge, 28/1. S. H. C. Grey, to No. 2 F.T.S. on appointment to S.S. Comn. (on probation), 23/1. R. H. Donkin, to No. 2 F.T.S., Digby, on appointment to a S.S. Comn. (on probation), 22/1. E. D. MacL. Hopkins, to No. 2 F.T.S., Digby, on appointment to a Perm. Comn., 26/1. J. A. Tindall, to No. 2 F.T.S., Digby, on appointment to a Perm. Comn., 18/1. G. D. Middleton and A. G. Pickering, to No. 481 Flight, Malta, 14/1. A. T. S. Studdert, to No. 1 Sqdn., Iraq, 15/1. The under-mentioned Pilot Officers are all posted to No. 2 F.T.S., Digby, on appointment to S.S. Comns. (on probation), 16/1:—C. P. Ashton-Jinks, W. L. Bateman, P. S. Cook, C. H. L. Evans, C. V. Godfrey, F. Gower-Jones, J. A. Grieves, V. G. A. Hatcher, W. A. Hills, V. W. Huggett, C. S. John, H. C. Johnson, C. G. Lucas, D. Mackenzie, A. F. Merritt, D. H. A. C. D. Patton-Bethune, W. M. Phillips, W. J. Pickard, E. G. Searson, L. S. S. Tunks, G. A. Underdown, H. J. Walker, W. F. Ward. J. H. C. Purvis, to No. 25 Sqdn., Hawkinge, 27/1.

Medical Branch.—Squadron Leaders K. Biggs, M.C., D.P.H., to R.A.F. Depot on transfer to Home Estab., 29/12. A. Grant, M.B.E., M.B., D.P.H., to H.Q., India, 15/1.

Flying Officers R. T. F. Grace, M.B., to R.A.F. Depot on transfer to Home Estab., 14/1. G. M. Anderson, M.B., to No. 1 F.T.S., Netheravon, 3/1. J. Magner, M.B., to R.A.F. Base, Gosport, instead of to R.A.F. Depot, as previously notified, 26/1. W. D. McKeown, M.B., to Electrical and Wireless School, Flowerdown, 16/12.

Stores Branch.—Flight Lieutenants P. F. Connaughton and P. J. Murphy, to H.Q., Iraq, 15/1. Flying Officers E. F. Elliott and G. W. Longstaff, to H.Q., Iraq, 15/1. A. Walters, to R.A.F. Depot on transfer to Home Estab., 10/1.

Accountant Branch.—Pilot Officers D. C. Stone, to No. 11 Sqdn., Netheravon, 21/1. C. L. Dook, to No. 2 Sqdn., Manston, 21/1. J. P. Cave, to C.F.S., Upavon, 21/1. D. Sender, to No. 19 Sqdn., Duxford 21/1. J. A. Stephenson, to Arm. and Gunnery School, Eastchurch 21/1. A. L. Derry, to No. 43 Sqdn., Henlow, 21/1. W. F. Quilliam to No. 3 Sqdn., Upavon, 21/1. H. Crowther, to No. 23 Sqdn., Henlow 21/1. H. R. Withers, to R.A.F. Depot, 21/1. A. E. Fairs, M.C., to School of Army Co-operation, Old Sarum, 21/1. K. A. Jackman, to Electrical and Wireless School, Flowerdown, 21/1. J. Lambie, to School of Photography, S. Farnborough, 21/1. R. Cassels, to No. 100 Sqdn., Spittlegate, 21/1.

R.A.F. Cadetships for Halton.

The Air Ministry announces that Aircraft Apprentices E. White, J. E. Allen, J. E. MacCallum, N. A. Tait, R. C. Field and G. H. H. Procter, from No. 1 School of Technical Training (Apprentices), Halton, have been selected for cadetships at the Royal Air Force Cadet College, Cranwell, on the results of the examinations held on completion of their three years' training as aircraft apprentices.

A "Sir Charles Wakefield" Scholarship, valued at £75, has been awarded to Flight Cadet E. White.

The successful Cadets come from the following places: E. White, Cawsand, near Plymouth; J. E. Allen, Bishop's Stoke, Hants; J. E. MacCallum, Portadown, Co. Armagh, Ireland; N. A. Tait, Saxlingham, Norwich; R. C. Field, Sidmouth, Devon; G. H. H. Procter, Gillingham, Kent.

Aircraft Apprentices.

The Air Ministry announces that five hundred aircraft apprentices, between the ages of 15 and 16½ (extended in certain cases to 17 years) are required by the Royal Air Force for entry into the School of Technical Training, Halton, Bucks. They will be enlisted as the result of an open competition and of a limited competition held by the Civil Service Commissioners and the Air Ministry respectively. Successful candidates will be required to complete a period of 12 (twelve) years' service from the age of 18, in addition to the training period. At the age of 30 they may return to civil life or may be allowed to re-engage to complete time for pension.

Full information regarding the apprentice scheme, which offers a good opening to well-educated boys of obtaining a three years' apprentice course of a high standard and of following an interesting technical career, can be obtained on application to the Royal Air Force (Apprentice Department), 4, Henrietta Street, W.C.2.

The principal trades open to boys are carpenter-rigger, aero engine fitter and wireless operator mechanic. The apprentices are given a thorough training in their trade by highly qualified technical instructors and their general education is also carried on simultaneously by civilian schoolmasters.

During the training period the rate of pay is 7s. a week for the first two years and 10s. 6d. a week thereafter until the apprentice has completed his training. Normally he is then posted to a unit for duty as an aircraftsman, the rate of pay varying from 3s. 3d. to 5s. 6d. per day according to the success attained in the passing out examination. In addition a few of special promise proceed to the Royal Air Force Cadet College for training as Commissioned Officers.

For the remainder, opportunities arise later to volunteer to qualify in flying and become serjeant pilots

A Tour of the Punjab.

The Lahore correspondent of *The Times*, in a message dated Jan. 26, states:—

Sir Malcolm Hailey, Governor of the Punjab, flew on Monday from Lahore to Rawal Pindi in a D.H.9a biplane to begin a tour in that district. This is the first occasion on which an Indian Provincial Governor has used an aeroplane in the course of his official duties. He is likely shortly to fly to Delhi.

The R.N.A.S. as Lucullus.

It is proposed to hold a Dinner on Apr. 15, at the Victoria Hotel, Northumberland Avenue.

Admiral of the Fleet, Viscount Jellicoe, O.M., G.C.V.O., R.N., has consented to preside. Admiral Sir Richard Phillimore, K.C.B., G.C.M.G., R.N., will act as Vice-President. The Chairman of the Dinner Committee is Rear Admiral Murray F. Sueter, C.B., M.P.

The guests of the evening will be the officers of the Fleet Air Arm, including the attached Royal Air Force officers.

All officers who were attached to a Royal Naval Air Service unit during the War are eligible.

Single tickets 33s. each. Officers who are willing to entertain an officer of the Fleet Air Arm are invited to take an extra ticket. Combined tickets 3 guineas.

Applications for tickets, with cheque, should be sent to the Hon. Sec., R.N.A.S. Dinner, Royal United Service Institution, Whitehall, London, S.W.

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R.A.F. SPORTS.

Rugby Football.

R.A.F. v. Bristol:—The R.A.F. were beaten at Bristol by Bristol on Jan. 23, by 3 tries to nil.

The Times' account of the game said that the forwards were evenly matched in the first half but after the interval Cpl. Johnson, R.A.F., retired hurt, and Bristol gained the ascendancy. The account goes on to say that the R.A.F. were well served forward but gave a far from convincing display behind the scrummage. With the exception of Sq. Ldr. Russell, the backs were lacking in thrust, and were much inferior to those of Bristol.

Association Football.

Royal Air Force v. Corinthians: On Jan. 23, at the Crystal Palace, the Corinthians beat the R.A.F. by 7 goals to 2.

The weather conditions were very bad, heavy rain falling throughout the afternoon, together with a strong wind blowing down the pitch. During the first half, with the wind behind them, the Air Force played exceptionally well. But after half-time, with the score at 4—2 against them, they fell to pieces badly and there was only one side in it.

The combination of the Air Force forwards in the early part was excellent, a feature being the heading and accurate passing which repeatedly called forth the admiration of the few spectators present. AC. Morris opened the scoring with a fine individual effort, which deceived B. Howard Baker.

Soon afterwards the Corinthians equalised with an easy shot from G. B. Partridge, which the goalkeeper failed to gather. They increased their score with a hard shot from a corner, by A. G. Doggart. The next goal was an equaliser by the Air Force, an excellent shot by Kirk. Just before half-time, G. B. Partridge (Corinthians) scored twice.

In the second half, with the wind behind them, the Corinthians took the game into their own hands, adding three more goals, by A. G. Doggart 2 and G. B. Partridge 1.

From the Air Force view the game was a little disappointing, for a representative team with such a promising start should not so easily fall to pieces, the root of the trouble being possibly that players selected to represent their Service do not in some cases trouble to attain the extra stamina and turn of speed which is so essential. Officers in charge of football can best remedy this omission.

Despite the weather conditions the Air Force attendance was disappointing. For good Association football in the Royal Air Force there must be keenness, and as that keenness grows, so will the standard of the known players improve and the unknown players come to light. The R.A.F. team was:—

Flg. Off. G. A. Hadley (Coastal Area), Flg. Off. S. N. Webster (Martlesham Heath), F-S. Fretwell (Hawkinge), AC. Taylor (Andover), AC. Kirkham (Ruislip), AC. Underhill (Andover), AC. Blyth (Uxbridge), AC. Bishop (Henlow), AC. Jackson (Tangmere), AC. Kirk (Bircham Newton), AC. Morris (Halton).

Hockey.

R.A.F. v. R.E. (Chatham):—This match was played at Halton on Jan. 27, and resulted in a win for the R.A.F. by five goals to one.

The Royal Engineers put a weak side in the field, as six of their regular team were playing for the Army against Oxford. The R.A.F. were undoubtedly the better side, their forwards were quicker on the ball and their defence was very sound.

In the first few minutes Plt. Off. Hall scored from an accurate pass by Plt. Off. Vines. From this point the Air Force kept the game in their opponent's half. The R.A.F. team were:—

AC. I. Johnson (Cranwell), goal; Flt. Lt. F. J. Murphy (Halton) and AC.2. Beck (Worthydown), backs; Flg. Off. H. S. Davidson (Duxford), Flg. Off. A. F. Cook (Cranwell), and Flg. Off. C. F. Roupell (Cranwell), half-backs; Plt. Off. C. F. Vines (Farnborough), Flg. Off. V. B. Bingham-Hall (Farnborough), Flt. Lt. C. G. Wigglesworth (Calshot), Plt. Off. R. E. Hall (Duxford), and Flt. Lt. H. N. Hampton (Uxbridge), forwards.

AEROPLANE EQUIPMENT.

The following letter deserves consideration by our Government Experts:—

Sir,—In your leading article of last issue, I note that you do not mention the ridiculous weight of some of the standard aeroplane equipment.

When I remember the money spent in cutting the aeroplane detail down to the last ounce, it does seem to me that this same care should be extended to the design of the equipment.

Take by way of example the solid brass precision bomb-sight and its solid brass bracket. Why is this not made in a light alloy? Is it that brass is more suitable for parts subject to wear and that electro action might effect the accuracy should light alloy and brass be used together? Or is it that instrument manufacturers have been brought up on brass and are not familiar with the light alloys?

Then there is the Véry blunderbuss, the brass compass and brass socket, brass Lewis drum pegs, etc.

I suggest that designers acquainted with these weights should calculate the saving against light alloy and convert to gallons.

(Signed) F. M. Reilly.

THE SERVICES AND THE NATION.

A lecture was given on Jan. 27, at the Royal United Service Institution, by Colonel J. P. Villiers-Stuart, C.B., D.S.O., O.B.E., on "The Nation in Relation to its Armed Forces."

The Lecturer introduced his subject by tracing war from the primeval to the present, and he pointed out that the coming of attacks from the air on the non-combatant population completed the cycle. Universal Service, which followed the French Revolution, had healed the breach between the civil and military populations on the Continent. This gap was not closed in this country until the War 1914-18. Even then it had not been closed in quite the same way because the Services had been rather swamped by than amalgamated with the civilian population.

With regard to air attacks on the non-combatant population, Colonel Villiers-Stuart said that these were impossible to prevent. He did not believe that the Air Arm would in any way replace the other Services. He considered that given a good army and practically no air force on the one side and a large air force and no army on the other, the army would eventually walk through and destroy the enemy aerodromes. [Col. Villiers-Stuart did not explain what the air force would do to unprotected troops meanwhile.]

Reverting to the problem of the non-combatant population the Lecturer pointed out that air attacks would probably take place during the absence from home of the Expeditionary Forces, and therefore it was incumbent upon the Services to teach the civil population how to take care of themselves. It was not simply a matter of anti-aircraft guns. What would be the *moral* of the civilian population in the face of gas attacks from the air?

He suggested that such problems would have to be handled by municipal organisation. Local authorities would have to organise such details as the printing and storing of instructions for protection when necessary against H.E., gas, etc. A general issue of gas masks was impracticable but it was not a difficult matter to make a room gas-proof. Essential food supplies would have to be protected. Fire-fighting appliances, medical equipment, and anti-gas stores, should be available for emergencies. It would be necessary to segregate those who had been infected by mustard gas.

In order that such organisation should run smoothly, Colonel Villiers-Stuart said that the local authorities would require military supervision, and the duties of each, clearly defined, should be embodied in an Act of Parliament, which could be made Law at the outbreak of hostilities.

The Lecturer said that he would like to see the air menace used as a lever to amalgamate the armed forces with the civil population in order that the Nation might be trained to take up its own defence. As things are at present, in the event of air attack, the civil population would blame the Services for failing to protect them. A closer understanding between the two would educate both.

He considered that the soldier's life should conform more to the changing conditions of civil life. Education meant knowledge, but only experience could give responsibility. The Nation had not been attacked in its own homes since 1066. Was it ready for the next war?

Air Commodore Ludlow-Hewitt said that he had no remarks to make as he considered that the lecture was uncontroversial.

Rear-Admiral Boyle said that he thought that the Flying Service should not attempt to educate the Nation until they had settled their own differences.

Colonel John Bryant, T.F., thought that the Territorial Force was the link between the Nation and the Services.

The Chairman, Lieut.-General Sir Philip Chetwode, Bt., K.C.B., K.C.M.G., D.S.O., said that he thought the Lecturer had exaggerated the danger of air attack. Such an attack must be continuous and intensive to be effective, and would require a vast reserve. It would probably necessitate the withdrawal by the attacking Power of its entire air arm from the Field. He thought that wrath and indignation would be a better description of the attitude of the civilian population than broken *moral*.

As a serving soldier he could not tell the audience what was being done by the Committee of Imperial Defence, but he could assure them that action was being taken by them, although their plans were not yet complete. The Air Council had already made a beginning with the Auxiliary Air Force, but unfortunately the response from the civil population was very poor indeed.

With regard to the soldier's life, he considered that the Services had adapted themselves to the changing conditions of civil life. Guards had been reduced to a minimum in his own Command, and all N.C.O.'s were allowed to wear plain clothes off duty. Any man could get permission from his Colonel to wear plain clothes. [This idea was started by Sir Horace Smith-Dorrien at Aldershot before the War 1914-18.]

He did not agree with Col. Villiers-Stuart that the civil population was out of touch with the Services. He knew that the civil population both understood and liked the Services.—C. M. MCA.

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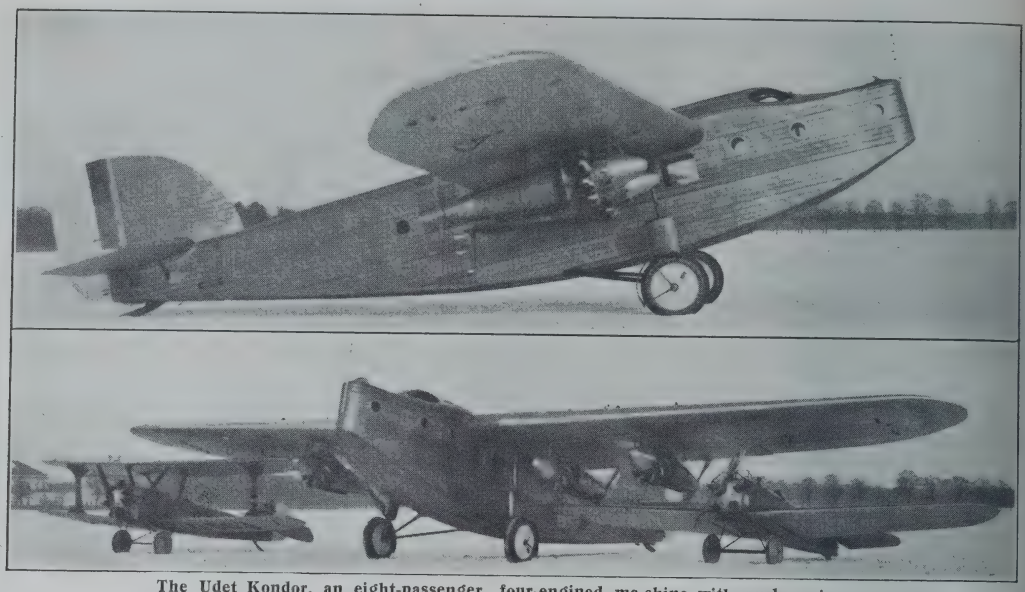
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The Udet Kondor, an eight-passenger, four-engined machine with pusher airscrews.

THE UDET FOUR-ENGINED MACHINE.

Photographs, which are here reproduced, show the latest product of the Udet Flugzeugbau of Ramersdorf, München. This is a passenger-carrying monoplane fitted with four Siemens-Halske air-cooled radial engines of 100 h.p. each, and it is known as the Udet Kondor.

The most notable feature of this machine is that the engines are suspended close up to the wing, and drive through shafts "pusher" airscrews, behind the trailing edge.

Apart from this the machine is a normal cantilever monoplane of clean design. The fuselage is of all-duralumin construction and has a large open cockpit, for two pilots and a navigator, in the nose. The cabin is very roomy, fitted with sash windows glazed with triplex, and electrically lighted. There is the usual lavatory compartment and a separate baggage room. Armchairs for eight passengers are fitted.

The wing is of timber, built on two box spars, with duralumin drag struts and plywood ribs, three-ply covered. Petrol and oil tanks are carried in the wing, with independent tanks for each engine. No data as to weight or performance are available, but dimensions are given alongside one of the illustrations.

THE BOEING MAIL PLANE.

The Boeing Airplane Co. of Seattle have recently produced a Liberty-engined mail-carrying biplane which has been designed to meet the requirements of the U.S. Post Office Department.

It is known as the Boeing Mail Plane and is a normal double-bay tractor biplane fitted with a standard 400 h.p. Liberty XII engine, as required by the U.S. Government.

The wings are of a semi-thick section, known as the Boeing 103, and are of fabric-covered wooden construction. The wings are braced with four sets of steel-tube N struts, with the usual lift and anti-lift wire-bracing between the outer sets of struts.

The inner bays are braced in an unusual fashion. The top plane has no centre section, the two halves of the top plane meeting at the centre-line, where they are attached to an inverted Vee cabane. At the point where the cabane struts are attached to the top longerons of the fuselage two sloping struts run out to the bottom plane to a point where the inner sets of N interplane struts are attached.

The inner sets of N struts are slightly splayed out. This arrangement can be seen clearly on the accompanying photographs. All wing fittings are sunk in the wings making the



THE UDET KONDOR.—This photograph shows two of the engines of this new machine, and the very simple tank and pipe arrangements. The dimensions of the Kondor are :—

Span ... 22.0 m. (72 ft. 3 in.)
Length ... 15.5 m. (50 ft. 10 in.)
Height ... 3.7 m. (12 ft. 1 in.)
Wing area 70 sq. m. (752 sq. ft.)

The cabin is 3.9 m. (12 ft. 8 in.) long, 1.6 m. (5 ft. 3 in.) wide and 2.0 m. (6 ft. 7 in.) high, which is very roomy for a machine of such limited power. The pilot with the machine is Herr Rother, of the Aero-Lloyd firm.


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THE BOEING MAIL PLANE.—Two views of the Mail-carrier designed by the Boeing Airplane Co. of Seattle, to exceed the requirements of the U.S. Post Office.

wings very clean. Unbalanced ailerons are fitted to both top and bottom planes.

The fuselage is of mixed wood and metal construction. The front and rear sections are built of steel tubes while the intervening section is of wooden monocoque construction.

The engine is mounted on a steel tube structure with ash bearers. The radiator is of the tunnel type mounted below the engine, air entering through an opening behind the airscrew and passing out through louvres behind the radiator. Temperature control is by means of the conventional shutters.

Immediately behind the engine is the mail compartment with the pilot's cockpit well aft of the wings. A pressure fire-extinguishing system and a fire-proof bulkhead are provided for the protection of the pilot and mail.

The undercarriage is of the axle-less type, each wheel being carried on a pyramid of three steel struts. The bent axle members are suspended on oleo-pneumatic shock-absorbers mounted on the apex of the Vee formed by the other two members. The wheel track is 7 ft. 4 ins.

The tail unit is quite normal, consisting of fin and tail plane, unbalanced rudder and elevators. The tail plane is adjustable during flight.

SPECIFICATION.

Span	44 ft. 2 in.	Fuel capacity	125 gals.
Length	33 ft. 11 in.	Endurance at cruising speed	7 hours.
Height	12 ft. 2 in.	Max. speed, full load	135 m.p.h.
Chord	6 ft. 7 in.	Landing speed, full load	50-55 m.p.h.
Gap	6 ft. 5 in.	Climb to 5,000 ft., full load	8 mins.
Area of wings	547 sq. ft.	Climb to 10,000 ft., full load	18 mins.
Weight empty	3,425 lbs.	Service ceiling	15,800 ft.
Useful load	2,070 lbs.		
Total weight	5,495 lbs.		
Wing loading	10.05 lbs./sq. ft.		
Power loading	13.71 lbs./h.p.		

AIR SURVEY WORK.

There is a vacancy with an English aerial survey firm in the Argentine for a man, trained and competent as a surveyor and a reliable mathematician. It is not essential that he should be a pilot or observer so long as he has had air experience which includes plenty of aerial photographic work on a serious scale on one of the fronts. Anyone feeling competent and in a position to apply for this post, is asked to communicate with the Editor, who will put him in touch the head of the firm.

THE BELGIAN CONGO AIR SERVICE.

The inaugural flight of the new air service in the Belgian Congo between Kinshasa (Leopoldville) and Luebo was made on Apr. 25, 1925, and the service has been in regular operation since June 1, maintaining 100 per cent. of the scheduled service between that date and the end of 1925. During January, 1926, the extension of this service to Gulé (Kansenia), where connection is made with the railway to Elizabethville, has been put into operation.

The route from Kinshasa to Luebo follows the course of the Congo for some 150 km. (95 miles) to Bandundu, and of the Kasai River for another 750 km., making a total of 900 km. (560 miles), with intermediate stops at Bandundu, and Ilebo.

The extension was practically straight across country in a south-easterly direction for 800 km. (500 miles), and connects with the railway at Bukama (the railhead), as well as at Gulé (about 100 miles nearer to Elizabethville). There is an intermediate stop at Kanda Kanda, about half-way between Luebo and Bukama.

The preparation of the route involved the clearing and equipping of seven aerodromes, at the places already named, of forty-three auxiliary landing grounds, and of the provision of sheds, workshops and similar equipment. This work was begun in October, 1923, and in view of the difficulties inherent in the nature of the country and the lack of communications, it cannot be said that any undue time has been wasted.

The service is operated by the S.A.B.E.N.A. (Société Anonyme Belge d'Exploitation de la Navigation Aérienne) using three-engined Handley Page aeroplanes of the W.8F. type (one Rolls-Royce Eagle, two Puma, engines), and the very satisfactory results obtained are particularly striking as compared to the very grave difficulties which were encountered in the earlier experimental seaplane service along the Congo River.

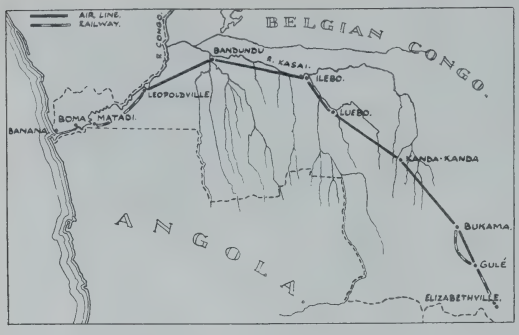
The actual operation of this line is arranged in conjunction with the Compagnie Maritime Belge du Congo, which runs a steamer service between Antwerp and Matadi, the Chemin de Fer du Congo, which connects Matadi with Kinshasa, and the Chemin de Fer de Katanga, which connects the terminus of the air line with Elizabethville.

Mails, passengers and goods are carried by the air line. The mail steamer from Antwerp reaches Banane, at the mouth of the Congo, normally early in the morning. Mails are there transferred to a small steamer which takes them to Matadi, and on the following morning they leave Matadi by



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rail for Kinshasa, which they reach on the following day. Passengers usually remain on the mail boat, which waits for a day or more at Boma, and before proceeding to Matadi, and do not reach Kinshasa till a day later than the mail. A mail machine is despatched on the morning following the receipt of the mail at Kinshasa, and on the following morning a passenger machine—which also takes any mail left over from the first despatch—follows it.

The air service reaches Luebo on the day of departure from Kinshasa, Gulé on the following day, and passengers, mails and goods reach Elizabethville on the third day, by train, which, for 1,100 miles in Central Africa, is distinctly rapid travelling. The journey from Antwerp to Elizabethville occupies 23 days. An additional service, from Boma to Kinshasa, is to be operated in the future, and will reduce this time by a further two days.

The return air service leaves Gulé after two days' interval, and it is possible to return an answer to a letter forwarded by air, to return by the same boat on its departure from Matadi. Letters and other mail packages by air on this service are not surcharged—there can be little doubt that the cost to the postal authorities of carrying them by air is in fact considerably less than by the alternative methods available.

During the seven months of operation between Kinshasa and Luebo in 1925, 21,725 kg. of mail, 1,666 kg. of goods, and 221 passengers were carried. The return mail from Luebo increased from 40 kg. for the first trip, to 500 kg., and sometimes 700 kg. per trip, in six months. The service is operated only in connection with the steamer service—at about fortnightly intervals.

Fares and rates charged are higher for the journey from Kinshasa up-river than in the reverse direction, presumably with the idea of promoting traffic in the outward direction. From Kinshasa to Luebo they are 3,825 francs per passenger and 34 francs per kg. (2,720 francs and 25.5 francs for the reverse journey) and from Luebo to Gulé 4,000 francs per passenger and 40 francs per kg. (3,200 francs and 32 francs for the reverse journey). These rates average three to four francs per passenger kilometre, or at present rate of exchange, about 1s to 1s 4d. per passenger mile—so that there should be adequate inducement to any traffic which is available, to use the service. No information is available as to the terms of the arrangement with the postal authorities, but it is by no means difficult to believe that rates which pay handsomely for the air service, but cost no more than the alternative river transport, could be justified in a case of this sort. The operations are, it is said, financially satisfactory to the S.A.B.E.N.A.

A SUCCESSFUL AMERICAN LIGHT AEROPLANE.

The outstanding feature of the New York Races was th success of the Powell light aeroplane in the light aeroplan races. The Bristol Cherub-engined Powell biplane succeede in winning the *Scientific American*, the *Aero Digest*, and th *Dayton Daily News* Light Airplane Trophies and after th last race made 9,800 feet in 38 mins in an altitude test.

The Powell "Racer" was designed by Professor C. H Powell, of the Aeronautics Department of the University o Detroit, and was designed some eighteen months before th date of the New York races.

Owing to the lack of development of the light aeroplane i America great difficulty was experienced in obtaining suit able components and materials. The Bristol Cherub engine together with the small-diameter Palmer wheels and th Accles and Pollock streamline solid-drawn steel tube, wer imported from this country.

This machine resembles a full-sized aeroplane in perfec miniature, and from the point of view of construction em bodies the methods of the normal aeroplane. The wings ar of conventional construction, except that the wire lugs for th streamline bracing wires are placed inside the wing, thi being an arrangement where the streamline wire shows t true advantage.

The design of the fittings was such as to allow the wire t swing in all directions, thus giving the wire a direct pul without any bending at the threads. The "burying" o these fittings was a decided accomplishment, as the win thickness at the front spar was only two inches and at th back spar one and a-half inches. The top plane is in on piece with the dihedral built in, and not bent.

The fuselage is of plywood built up on $\frac{3}{8}$-inch plywoo formers held together by four longerons. The engine wa bolted to a truncated steel pyramid attached securely t the longerons. The whole fuselage is of a very good stream line shape, the rear half being of plywood and the cowlin over the engine of duralumin sheet.

The airscrew is a Curtiss-Reed fitted with a spinner. Th tail unit is built up of wood, and plywood-covered, and is o conventional form. All levers, brackets, bell cranks, etc. were designed to be cut out of one piece and bent to shap without welding. The hinges of the rudder and elevators ar made of continuous strips of leather.

The undercarriage is of the Vee type with divided axle the vertical bracing wire being dispensed with, as the stee trough was made strong and rigid enough to avoid bending

SPECIFICATION.

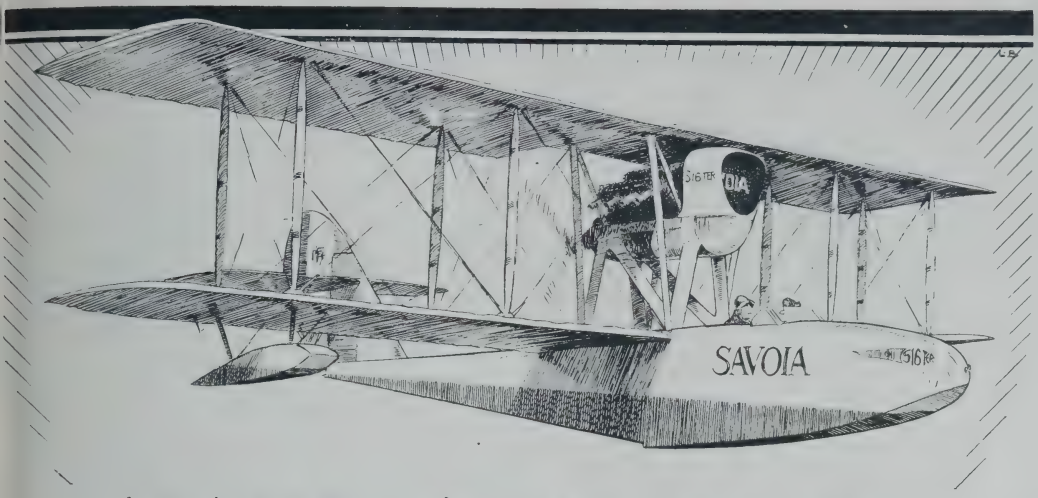
Span	15 ft. 9 ins.	Wing loading	6.2 lbs./sq. ft
Length	14 ft. 0 ins.	Power loading (at 30 h.p.)	15.8 lbs./h.p
Height	5 ft. 2 ins.	Fuel Capacity	8 gals
Chord	2 ft. 8 ins.	Endurance	6 hours
Gap	2 ft. 6 ins.	Range	400 miles
Stagger	9½ ins.	Speed, max.	85 m.p.h.
Span of tail	6 ft. 0 ins.	Speed, landing	50 m.p.h.
Wing area	76 sq. ft.	Climb to 5,000 ft.	17 mins
Weight empty	310 lbs.	Climb to 10,000 ft.	45 mins.
Weight fuel and oil	15 lbs.	Ceiling	15,000 ft.
Weight pilot	150 lbs.		
Weight total	475 lbs.		

Everything possible is streamlined, which well repays for the little extra trouble. All controls are direct-acting as far as possible; the rocking lever on the torque tube being placed forward, so as to avoid contact with the pilot's legs. The pilot's seat is about two inches from the bottom of the floor and all three push-rods go under this and still have clearance for working. Pedals are used in place of the more usual rudder bar, which permit of finer touch.

The tachometer is fitted into the wind-shield, and some difficulty was experienced in finding room for the tachometer cable and the oil-gauge pipe with the original eight-gallon tank fitted. For the New York races a special two-gallon tank was installed which got over this difficulty. The Bristol Cherub engine has given no trouble and was found to run very smoothly on the Powell engine-bearers.



AN AMERICAN LIGHT AEROPLANE.—The Powell Racer, designed and built by Professor C. H. Powell, of the University of Detroit. It is fitted with a Bristol Cherub engine. At the 1925 New York Races the machine won all the light aeroplane events, and in addition reached a height of 9,800 feet in 38 mins. in an altitude test.



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THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

Flying Instruction was only possible on two days during the past week and then only to a very limited extent. With one D.H. Moth only available the total flying for the week was eight hours.

The following members had flying instruction :—J. S. M. Michie, F. C. Elford, Mrs. Atkey, S. C. Richards, R. C. Brighten, Sir John Rhodes, W. Hay, R. P. Cooper, S. O. Bradshaw, H. R. Ogston, H. O. Richardson, C. E. Murrell, P. Johnson, N. Jones, K. V. Wright, H. R. Thomas.

Solo flights were made by G. H. Craig and Mrs. Eliott-Lynn.

The total flying time for the month of January was 53 hrs. 15 mins. and practically all this has been done on the one machine.

The Lancashire Aero Club.

Flying took place on Friday, Saturday and Sunday. Mr. Scholes being away for the week-end on some nefarious work, the whole of the flying devolved on Mr. Cantrill.

The following victims had "dual" :—Messrs. C. A. S. Parker, B. H. Smith, T. Hardy, C. Colley, R. Tummers, H. Mendelson, H. S. Stern, R. R. Williams, J. Goodyear, T. Wilkinson, M. Lacayo, C. Crabtree, J. N. Chadwick. Mr. Lacayo did 5 mins. solo.

The total flying time was 8 hrs. 3 mins. Tests occupied 20 mins.

There is now quite a queue of people waiting to go for their tickets, but whilst our barograph "graphs" quite well it persistently refuses to "baro." When this is remedied we hope to develop "A" Licences like mushrooms.

The Newcastle-upon-Tyne Aero Club.

Total flying time for the week ending Jan. 31, 1926, 11 hrs. 50 mins.

Dual Instruction with Major Packman : Miss C. R. Leathart (3 flights, 1 hr. 45 mins.), Mr. J. A. Somerville (2 flights, 65 mins.), Mr. G. H. Twine (30 mins.), Mr. J. D. Irving (2 flights, 65 mins.), Mr. J. Bell (20 mins.); Mr. C. Thompson (30 mins.), L. Smith (2 flights, 60 mins.), J. M. Campbell (15 mins.), Mr. A. D. Bruce (30 mins.).

Solo : Mr. P. F. Heppel, 3 flights, totalling 1 hr. 15 mins., with the following as passengers :—Mr. I. Stanley, Mr. H. Ellis, and Mr. Nettleton. Mr. W. Baxter Ellis, 2 flights, with Mr. Metcalf and Mr. Sutherland as passengers. Mr. Thompson, 2 flights, 35 mins.

Passengers with Major Packman : Miss Skelton, Miss Tommay, Miss Cochrane.

The airscrew of LX was damaged on Saturday just before noon, but a new one was delivered from De Havilland's at night and the machine was hard at work again by 10.30 on Sunday morning. The promptness of despatch of this necessary item of Moth equipment enabled flying to be carried out on Sunday as usual, though many members were disappointed on Saturday afternoon.

Despite all the efforts of those members who have flown during the month, *Novocastria* (LX) finished up in perfect trim, with 62 hrs. 11 mins., of the total of 69 hrs. 24 mins., for the month to her credit.

Mr. Ellis' Gull has now grown its wings, and, possibly because it is rather large for that portion of the hangar allotted to it, Mr. Brown is busy clipping its wing (tips). The engine is now on rail, and it is hoped to have it in the air very soon.

A West Country Proposition.

The following letter has been received from Monmouthshire :—

Sir,—I notice in last week's issue of The Aeroplane, in the Light Aeroplane Club Notes under "A Light Airship Club," that the Air Ministry Scheme of Light Aeroplane Clubs is still short of one club to complete the number it wants.

Have they considered forming one in the West of England or South Wales ?

If you take a map and mark out the places of the Clubs you will find that the South West has been left right out. Birmingham is much too far away to be of any use to us in the South West and I am sure it is for the folks the other side of the Bristol Channel.

Why not form one at Bristol ? It would be central for all the South West. Or say Cardiff, which is very easy to get to, from most of the towns within fifty miles' distance.

They would not have much trouble to get ground, especially at Bristol where there are aerodromes already and manufacturers, who I am sure would assist in the forming of a club.

There would be plenty of support for the club in this area and it would be filling in the gap left out of the Air Ministry's Scheme.

(Signed) "Kite."

The Pay of Light Aeroplane Pilots.

The following letter is worthy of serious consideration :—

Sir,—After having earned a livelihood for the past six years, at home and abroad, in the industry called Aviation, I suppose it ill becomes one to groan at the complete state of stagnation that flying is coming to in this country.

There never has been any encouragement for a man to make flying his career, either in the Service or outside it, and my experience is that most firms pay their pilots just as little as they possibly can, consistent with getting the quality, but I do really think that the very lowest note is struck when one sees an advertisement in your good paper, advertising for a Pilot-Instructor at £260 per annum, generously including an extra emolument of 5s. per flying hour.

Given the most favourable conditions this only means an increase of £100 per year. Anyone who has instructed in flying for long realises that 400 hours a year is a high average. Some pilots in Imperial Airways do as much as 800 hours in a year I know, but they are able, or perhaps I should say have, to fly in weather that would be unsuitable for instructional work.

I have no Bolshevik tendencies and am strongly adverse to such formations as Pilots' Unions, etc., but I really think it is time something was done when a new show starts and sets out to pay its Flying Instructors a salary considerably less than a Pilot Officer under training in the Royal Air Force, and doubtless would expect applicants for the post to have done one thousand or so hours' recent flying, and possess an A.1. C.F.S. category.

I submit that if a concern is so poverty-stricken at the commencement that it cannot afford to pay its responsible staff much more than the local dustman, their period of operation will be extremely short. If this sort of thing is to be the bait for keen Short Service Commission Officers leaving the Air Force, and anxious to continue flying as a career, I am extremely sorry for the future chances of Civil Aviat in this country.

We have got some first-class material at present in our only Engl Air-line ("Only" looks a little weak too for Old England) but t won't last for ever.

The Civil Pilots in the near future can only come from the Force, and if they are to be prevented from becoming 'Bus-driv Porters, Commissionaires and such like highly paid trades, when t leave the Service, the master-minds who run our Civil Aviation c cerns will have to look a little farther ahead than they are doi at present.

Aeroplanes won't fly themselves. You cannot make commer pilots in five minutes, or in twelve months for that matter, unless five hours' solo on a Moth and twelve hours a year res training is to be the future qualification for an Air Line Pilot, wh rather upsets our present "B" Licence standard, I am just a little the dark as to whence our future pilots with experience are comi

(Signed) H. J. McDonough.

[One rather thinks that the price of pilot-instructors depends the Law of Supply and Demand, like most other commodities. told, including instructional flying, test flying and exhibition flyi a pilot ought to be able to do 12 hours a week in the air on an machine like a Moth, and over an aerodrome. That means £15 year. So the total wages would be some £400 a year. Which is bad pay for a man who would normally be, say, a draughtsman £3 10s. a week, or a commercial traveller at £300 a year, or a mo salesman at £150 plus commission.

When the Light Aeroplane Clubs expand and have 25 or 50 machi apiece and a couple of thousand members, the present pilot instructo who have come in on the ground floor, will, if they are competent, flying managers at £1,000 a year or more. And they will enga chauffeur-instructors at £5 a week—and glad to get it. But if th are not competent as managers then they will remain at their £ per ann. and somebody else will get the £1,000 a year. It is only t way of the World all over.—C. G. G.

THE FORMATION OF AN AIRSHIP CLUB.

The Airship Club was formed on Feb. 1, at a meeting he at 3, Clifford Street, London, W.1. The following is an e tract from the minutes of the Meeting.

Mr. Griffith Brewer, Chairman, moved and Lt.-Col. t Hon. Claude Brabazon seconded, "that the Airship Club no be formed." The resolution put to the meeting was carri unanimously.

The following members were elected and requested to ser on the Committee :—

Capt. W. G. Aston, R. M. Balston, Esq., Lieut.-Col. the Hon. Clau Brabazon, O.B.E. (late Irish Guards), Commander F. Boothby, O.B. R.N. (retired), Griffith Brewer, Esq., Chairman, The Lord Cunlif The Hon. F. Eveleigh de Moleyns, Lieut.-Col. Lockwood Marsh, C.B. Lieut. R. L. Preston, Coldstream Guards, Major C. C. Turner, R.A. (retired), Wing Commander A. C. Winter, R.A.F.

It was resolved that a limited company be formed to tak over the assets and liabilities of the Airship Club, the com pany to be called "Airship Clubs Ltd.," with a capital £100 divided into 2,000 shares of 1s. each. Each director hold one share, and to be a member of the Committee the Airship Club.

Formal application was made to the Air Ministry for th Club to be recognised and granted a subsidy such as thos which are accorded at present to Light Aeroplane Club and for permission to use the airship shed at Pulham wit the use of a portion of the Officers' Mess.

It is proposed to acquire an airship of 70,000 c.f. capacit fitted with two A.D.C. Cirrus engines as the Club trainin ship. And arrangements have been made whereby membe of the Club may purchase small airships of 44,000 c. capacity fitted with one A.D.C. Cirrus engine or two Black burne engines for £2,000 or £2,300 respectively.

Applications for membership enclosing the first year's sub scription (£3) should be forwarded to Griffith Brewer, Esq. Chairman of the Airship Club, c/o The Royal Aeronautica Society, 6, Albemarle Street, W.1.

It is decided that members should pay a subscription of £ per annum and 30s. per hour flying time, with a small extr fee for instruction as pilots for those who desire it.

It is hoped to arrange for the use of the airship shed a Moreton, near Dorchester, which would be convenient t Naval officers.

ANCESTOR-AIRCRAFT.

Those people who have memories of wartime aeroplane which they would like to preserve may be interested in very well produced set of postcards published by the Alph Publishing Company. The set of twelve are coloured re productions of water-colours by Mr. Geoffrey Watson of well known wartime types of British aeroplanes and seaplanes The machines are as follows :—Avro 504K, Armstrong Whitworth F.K.8 (usually known as the Big Ack) Bristo Fighter, D.H.9, F.2.A., F.E.2d., Handley Page 0/400, R.E.8 Sopwith Dolphin, Sopwith Camel, S.E.5a, and Short Sea plane.

As well as being artistic these pictures are accurate in de tail of the machines and the set is quite a good historica record of British machines used during the War. The pric of these cards is 1s. per dozen, which is really extraordinarily cheap for coloured postcards, and they can be obtained fro the Alpha Publishing Co. Ltd., 2-8, Scrutton Street, Finsbury London, E.C.2.



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HISTORICAL ACCURACY.

In a reference to Mr. C. R. Fairey in the last issue of The Aeroplane one was guilty of the statement that he was a draughtsman with Short Brothers before starting the Fairey Aviation Co., Ltd. One who knows corrects this statement and points out that Mr. Fairey was never a draughtsman, but was in fact Works Superintendent of the Short Factory at Eastchurch under the late Horace Short. He designed many machines and details of machines, but did not do the actual drawing.

As a personal reminiscence one would add that before joining Short Brothers Mr. Fairey was in charge of the building of that curious arrow-shaped tail-less biplane designed by Mr. Dunn at Eastchurch to demonstrate his theories on inherent stability. And in the very earliest days of aviation, somewhere about 1909-10, Mr. Fairey, who was already engaged in a responsible position on engineering work at a very early age, produced some highly interesting inherently stable flying-model aeroplanes. Which accounts for the fact that particular attention has been given to stability problems in all Fairey designs up to the present day.—C. G. G.

A TRANS-ATLANTIC VIEW.

An ex-R.A.F. Officer who is now in Canada sends the following information, which should be of value to those concerned with Civil Aviation :—

A most interesting address on the Commercial Future of Civil Aviation was given at a lunch held in Toronto on Jan. 11 to the members of the Canadian Club and their guests by Mr. William B. Stout, of the Stout Metal Airplane Company.

The Stout Conspiracy is a subsidiary of the Ford Motor Company, and manufactures the machines in use on the Ford Air Lines.

"Any industry not self-supporting is a charity. Faith and hope may inspire, but sturdy independence is essential to success," said Mr. Stout. "The commercial airplane of the future must support itself financially as well as mechanically. We have undertaken to demonstrate that it can be done. The fundamental base is safety for both conveyed and conveyor.

"At present we have ten monoplanes in service and since April last we have made three trips to Cleveland and three to Chicago weekly (or seven times round the earth) conveying solely Ford parts, with one exception, when we took a complete Ford touring car to Cleveland and assembled it there on arrival. We have had no casualties.

"These monoplanes with one 400 h.p. Liberty carry 1,000 to 1,500 lbs. of load at an air speed of 116 m.p.h. They are built entirely of metal and can carry ten passengers. With 1,000 lbs. of fuel we can carry 1,600 lbs. of pay cargo at roughly 10 cents. per lb. for 100 miles and make dividends. The air mail service starts in February of this year. Our output at present is one machine every two weeks.

"Commercial aviation has come, but what I would call personal aviation is still somewhat remote. The 'drive-it-yourself' plane must be made more fool-proof before it can be handed over to the public. As it is to-day 75 per cent. pilot and 25 per cent. machine won't do. We must attain to 51 per cent. machine and the balance pilotage.

"The difficulty abroad is 'subsidy-pap-feeding.' That we have demonstrated is not necessary."

The above are the main points touched on by Mr. Stout in his address, which, flavoured as it was with delightful touches of humour at intervals, made it most interesting.

One particular point is worth mentioning—that is, that on the routes they are now operating they have not got any intermediate landing grounds at all. The terminal aerodromes are so large (British Air Ministry please note) that after machines have taken off they can attain the necessary height *without leaving the precincts of the aerodrome*. No chimney-dodging or roof-scraping, as is prevalent at some terminal air ports, are known.

The Stout Company have now under test three-engined machines of the same type, as, like other sane-minded people, Mr. Stout realises that single and twin-engined machines will be as obsolete for commercial purposes in a few years' time as the single cylinder automobile is in the car industry to-day.

His closing remark, "We are coming to the point when we can let our dollars take wings, convinced that they will eventually return, like Noah's doves, to the Ark, but with something more than their bills," is one which seems likely to bear fruit, and one's only regret is that one is unable to think the same about Civil Aviation in England to-day, as played with by Imperial Airways to the accompaniment of a million or so of the taxpayer's money.

Truly may it be said that our air lines in England are "Like the peace of God" in that they "pass all understanding."

Incidentally one notices that, in a speech at the "Old Colony Club" in London recently, the Director of Civil Aviation is reported as having said that France has twenty times as many pilots and machines on air lines as England has. One can only say that there are scores of excellent pilots waiting for jobs, and surely as many machines could be produced in a short time, were the Dillies and Dallies of the Directorate of Imperial Airways more alive to the situation, and to the ludicrous state into which Civil Aviation in England is drifting—and not only through the "subsidy-pap-feeding" principle—though no doubt that is a primary cause.—R. E. N.

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THE FLIGHT TOWARDS THE CAPE.

Mr. Alan Cobham, Mr. A. B. Elliott and Mr. Emmott who are on their way to the Cape, left Broken Hill, Northern Rhodesia, at 08.50 on Jan. 29, and arrived at Livingstone at noon. Before landing Mr. Cobham flew over the Victoria Falls for a time taking photographs. According to a dispatch to *The Daily Mail* his engine cut out when low down right over the Falls and nearly caused a sudden end to the expedition. However, it picked up again, and he was able to reach his landing ground. He attributed this trouble to water in the carburettor caused from flying through the spray of the Falls.

He left Livingstone on Jan. 30 and arrived safely at Bulawayo a few hours later.

THE NEXT R.Ae.C. MONTHLY HOUSE DINNER.

The Fourth Monthly House Dinner will be held at the Royal Aero Club on Wednesday, February 17, 1926, at 7.30 p.m. The subject for discussion will be "Private Flying." The number will be limited to sixty and seats will be allotted in order of application.

AIR SURVEY IN BRITAIN.

It is a matter of common knowledge that during 1925 the Ordnance Survey placed with the Aircraft Operating Co. Ltd. a contract for an experimental aerial survey covering part of the country in the neighbourhood of Eastbourne.

The object in view was to ascertain the utility of aerial survey methods for the purposes of periodical revision of the larger scale ordnance maps in respect of topographical detail. These maps are based upon a triangulated system of fixed points of a very high order of accuracy indeed, and up to the present topographical detail has been inserted as a result of very careful local surveys, mostly based on plane table methods, checked both by direct measurement and by reference to the primary system of fixed points.

The degree of accuracy attained in respect of detail is very high indeed, but in areas where rapid building or other development is occurring the cost of periodical revision by these methods is high, and revised sheets can only be issued at relatively long intervals, and rapidly become seriously incomplete.

That aerial photography is capable of producing in a short time, and at a moderate cost, records of changing topographical detail which could not otherwise be obtained, is not susceptible of argument. In flat country where such a networ of accurate fixed points as is provided by the ordnance surve exists, the results of aerial survey can undoubtedly be co rected to a standard of accuracy sufficient for all practic purposes by very simple methods. In cases where the groun is far from flat and changes of level are frequent and abrup local variations in the scale of the photographs must occu and these introduce more serious difficulties to the accurat plotting of detail from the photographs.

Whether these difficulties are in fact so serious as to ou weigh the advantages of aerial methods of survey can onl be settled by definite trial. It is for this reason that th particular district already mentioned, which is characterise by very steep contours, has been chosen for this experi mental survey. The official conclusions of the survey authori ties on the subject have not yet been reached, but certai information as to the work carried out by the Aircraf Operating Company is now available.

By permission of the Survey Authorities, this firm hav exhibited at the Royal Geographical Society a mosaic of par of the district near Willingdon. The mosaic—on a much reduced scale—is reproduced here. It was made after th original negatives had been handed over to the Ordnance Sur vey, from contact prints, and consequently is entirely un rectified. The accuracy with which the prints join up is remarkable tribute to the accuracy with which the pilot— Major Cochran-Patrick—carried out his functions. The par ticular area covered by this mosaic varies in level by ove 500 ft., and any marked inaccuracy of flying would ad gravely to the difficulties of accurately plotting details. Fo the purposes of the experiments now in hand, particular in terest attaches to the areas marked A, B, C, and D. In al these areas the mosaic shows building and road works eithe complete or in progress, which are entirely unmarked on th 25-inch ordnance map of 1910. At the moment of writing i is uncertain whether it will be possible to reproduce a smal copy of this map which will show this difference—there ar definite technical difficulties in so doing on the small scal which alone is possible. But it may be said that the mosai shows assemblages of new houses and roads, of an exten very considerably greater than the whole of Willingdo village, which are not shown on the map at all.

Whether the demands of the Ordnance Survey as t accuracy in the determination of detailed dimensions an



Supermarine "Southampton" Twin Engined Flying Boat.

(TWO 450 H.P. NAPIER LION ENGINES.)

AS AN EXAMPLE OF WIDE RANGE OF DESIGN, CONTRAST THE ABOVE TWIN ENGINED MACHINE WITH THE **SUPERMARINE NAPIER S4** MONOPLANE DESIGNED AND CONSTRUCTED FOR THE SCHNEIDER CUP RACE, 1925.

SUPERMARINE

ENGLAND.

positions can be met entirely by aerial methods has yet to be settled, but there can be little doubt that from the aerial survey much information of value, not to be found on the existing maps, can be obtained. If the difficulties of obtaining the required standard of accuracy by aerial methods are too great, there seems to be a case for the production, at fairly frequent intervals, of maps giving up-to-date topographical detail, but on a standard of accuracy lower than that heretofore obtaining. For very many purposes this high standard is unnecessary, and in those cases where it is needed it will always be possible to correct the photographic survey by ground methods over the particular area involved.



THE WORK OF THE AIRCRAFT OPERATING COMPANY.—This reproduction shows the area round Willingdon as it appears on the Ordnance Survey map, 1910 edition.

On comparing this with the photographic mosaic produced by the Aircraft Operating Co. it will be seen that the latter shows many details absent from the map. In particular the areas marked A, B, C and D on the photograph show new building and road work which was not in existence when the map was compiled.

The area marked D is particularly interesting. The photograph shows that a new building estate was in process of development at the time the photographs were taken.



Photographic mosaic of Willingdon and district. Compare this with the Ordnance map of the same area.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 1; Tuesday, 11; Wednesday, 14; Thursday, 11; Friday, 11; Saturday, 10; Sunday, 0.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 33, passengers 78, freight 8 tons.

AIR UNION:

Paris—London: Machines 15, passengers 38, freight 8½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 9, passengers 3, freight 1½ tons.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES: *Private*—Mr. Bennett Baggs to Brussels: Machine 1, passengers 0.

Total number of trips by British Machines, 34, carrying 78 passengers. Foreign Machines, 24, carrying 41 passengers.

Comparative Figures:

Week ending Jan. 31:

Machines, 58; Passengers, 119; Crews, 74; Total personnel, 193.

Corresponding week, 1925:

Machines, 47; Passengers, 97; Crews, 62; Total personnel, 159.

Corresponding week, 1924:

Machines, 58; Passengers, 112; Crews, 89; Total personnel, 201.

Corresponding week, 1923:

Machines, 29; Passengers, 52; Crews, 61; Total personnel, 113.

Corresponding week, 1922:

Machines, 22; Passengers, 42; Crews, 33; Total personnel, 75.

Corresponding week, 1921:

Machines, 13; Passengers, 8; Crews, 14; Total personnel, 22.

Croydon Notes.

At this season of the year there is always the expectation of new machines. This year the four new Handley Page W.10s (twin Napiers), the three Argosies (three Jaguars), and the five D.H.66s (three Jaguars and/or Jupiters), will appear

The first arrivals will certainly be the W.10s. The first one is practically finished and will be flying this week or early next week. And, provided that no unexpected difficulties arise, the first of the D.H.66s should be flying by the end of July.

Considering that the order was only given a few weeks ago and that the firm for the last five or six years have concentrated on single-engined work, the rapid production of a big triple-engined machine of radically new type will be a notable feat.

The progress of the Argosy is "wropt in mystery." The machines have been on order now for a year and one gathers that they are not likely to be flying before April at the very earliest. Rumour has it that a certain amount of delay has been caused by the fact that there was no shed at Coventry big enough to house them and such a shed has had to be built.

The Bristol Jupiter, "of the latest type," which is doing endurance tests, is forging ahead steadily. One is told that one may not refer to it by its type number as the Air Ministry regards this as secret. One explained how this type number was arrived at a week or so ago by the simple process of adding I to V. But by doing this one offends the secrecy department of the Air Ministry.

One may give the performance of the engine but one may not add I to V. And yet some people do not believe that the Secrecy Department of the Air Ministry is composed of scientists.

However, as one said, the Bristol Jupiter "of the latest type" is forging steadily ahead. Last week, Mr. F. L. Barnard and Lt.-Col. Minchin each made four trips between London and Bristol. Between Jan. 4 and Jan. 30 the engine had done 81 hours' flying, during which 9,008 miles have been covered. This is something over the distance from London to Adelaide in South Australia, or from London to the Behring Sea direct, and five times the distance from Cape Verde to Pernambuco.

It is also in excess of the distance covered by a radial engine of another type fitted in Mr. Cobham's machine, which has been flying since the middle of November. Moreover, the Jupiter has so far had no replacements.

Admittedly, flying between London and Bristol is not so arduous as flying from London to the Cape or to Australia, but there is really very little difference so far as the work of the engine is concerned.

A.D.C. Aircraft Ltd. have been busy again this week. Mr Perry has been testing numerous D.H.9as and also a Martinsyde-A.D.C.I. Also he took an Avro Airdisco to Stag Lane and back.—G. D.

Mr. Baker Leaves Croydon.

Mr. Stanley Baker, who has been in charge of Croydon Aerodrome since 1921, concluded his appointment on Saturday last to take up an important post in charge of the transport of the Navy, Army and Air Force canteens board.

On Friday there was a large gathering in the Trust House of everybody who is employed on the aerodrome. Mr. Baker was presented with a silver cigarette box and a salver. Commander Deacon, who is now in charge of the aerodrome, said how sorry everybody was to lose Mr. Baker, who replied in a brief and modest speech.

It was noteworthy that practically every department of every firm on the aerodrome turned up to the gathering in full strength.

Everyone will, though congratulating Mr. Baker on his new appointment, feel his loss very keenly. He was thoroughly efficient as C.A.T.O., and no one cared to get up against him. His successor will find his position exceedingly hard to fill.

A De Havilland Function.

On Wednesday, Jan. 27, the de Havilland Aircraft Company's Social Club held a fancy dress dance at the London Country Club. There was an excellent orchestra and a large crowd of members of the Club and their friends were there.

Many of the costumes were distinctly original and particularly noteworthy were Mr. John Lord of A. V. Roe and Co. heavily disguised as a Puritan, and Mr. Sigrist of the Hawker Engineering Co. disguised as a Mongol, or something super-Oriental. Unfortunately the Editor of this paper was not present, otherwise he would have been thrilled to the core.

Mr. St. Barbe and Mr. Broad of the de Havilland Co. scored a popular hit as a pair of French sailors. The whole affair went with a swing and everybody was sorry when it came to an end.—G. D.

PERSONAL NOTICES.

DEATHS.

LYONS.—On Feb. 1, at No. 4 Stores Depôt, R.A.F., Ickenham, from after effects of service in the Great War and Iraq later, Wing Cdr. T. O. Lyons, O.B.E., R.A.F.

RISK.—On Jan. 26, in Paris, of pneumonia, Lieut.-Colonel Charles Erskine Risk, D.S.O., late R.A.F. and R.M.L.I., only son of the late Paymaster-in-Chief William Bond Risk, R.N., and of Mrs. Risk, Babbacombe, Torquay.

Charles Risk was one of the earliest of our Service aviators. He was seconded from the Royal Marines to the Naval Wing of the Royal Flying Corps on its formation, and attended the first course at the Central Flying School at Upavon, when it was shared by the Admiralty and War Office, with Captain Godfrey Paine, R.N., as Commandant and Major Hugh Trenchard as Assistant-Commandant. He was the first commanding officer of the Naval Air Station at Felixstowe, and was there at the outbreak of War in 1914.

Throughout the War 1914-18 he was continually on active service, after a period with Armoured Cars, at first in Flanders and later in the Mediterranean and Near East, and none ever deserved a D.S.O better than he did.

After the Armistice he was again appointed to command at Felixstowe. At the end of his term in command he was placed on the half-pay list, and he retired from the R.A.F. with the rank of Wing-Commander in 1924.

Few officers have done better work than Charles Risk did while on the active list. He was a gallant and competent soldier, and though he did not profess to be an expert pilot he was a capable aviator. He had to a remarkable degree the ability to handle men. His officers regarded him as a friend and the other ranks had that affection for him which produces good work willingly done. One has never seen an air station so beautifully kept or run in such a happy spirit as was Felixstowe in the days before the War.

He was a man who made few enemies. Very few among those who enjoyed his cheery company and laughed at his escapades knew of the tragedy which lay behind his gaiety and threw a malign influence over what should have been—on sheer personal ability—as brilliant a career as any officer in the Air Force has had. Those of us who know the whole story have the greater admiration for the way in which Charles Risk did his duty as an officer and gentleman in spite of circumstances.—C. G. G.

BIRTH.

CHICK.—On Jan. 26, at a nursing home at Golders Green, to Angela Mary, wife of Flt. Lt. A. L. Chick, A.F.C., R.A.F.—a daughter.

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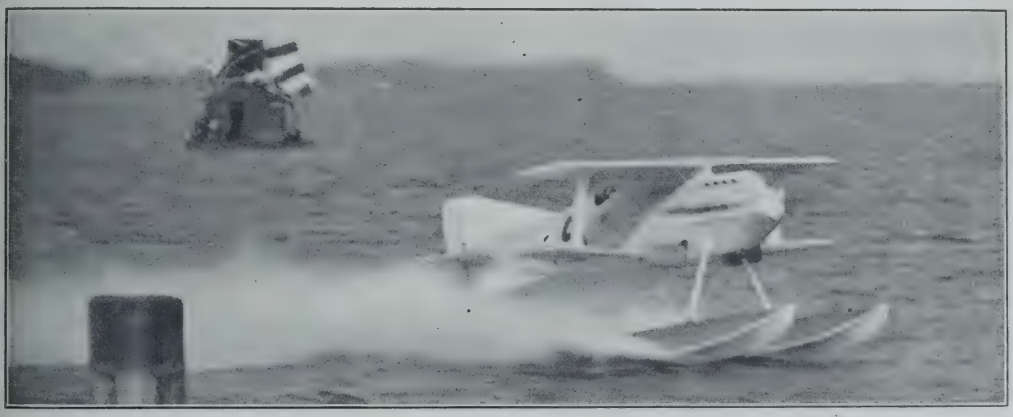
THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXX. No. 6 SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

"WHEREFORE DID THEY NOT THAT HOUR DESTROY US."—*(The Tempest.)*



A SCHNEIDER REMINISCENCE:—The Gloster III (Napier) getting off at Bay Shore. In the background is the time-keeper's box which was wrecked by the gale which wrecked the seaplane sheds on shore.

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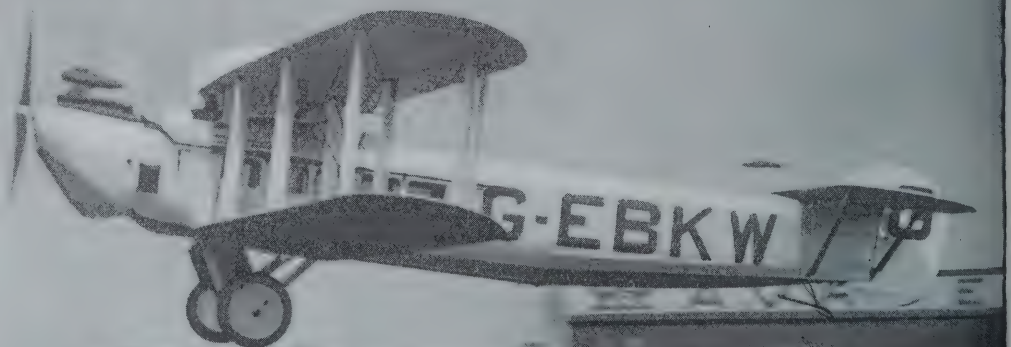
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No. 6

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE THREE-ENGINE POLICY.

Three-Engined Machines.

In connection with Commercial Aviation there has been an outbreak of designs for three-engined aeroplanes during 1925 and we are promised quite a number of this type and of various makes some time during 1926.

So far about the most successful three-engined machine which has flown is a Fokker monoplane fitted with three Wright Whirlwind air-cooled radial engine of 200 h.p. each. The machine was built in Mr. Fokker's usual rapid fashion with the aid of a number of feet of steel tubing and some oxy-acetylene welding pipes. The result is a 600 h.p. machine of moderate size which can be flown as something like a commercial proposition.

That is to say, a comparatively small number of passengers will fill the machine and consequently on a popular air line a service at frequent intervals can be given, whereas with the colossal machines which seem to be projected in this country probably the air line managers will only be able to fill one machine a day, except during the Summer, so that there will be little advantage over the ordinary boat and train service.

The three-engined Fokker has a keen rival in the three-engined Koolhoven machine, the F.K.33, a model of which appeared at the Paris Aero Show in 1924. This machine, unlike the Fokker, was designed from the very beginning as a three-engined job. The engines are Pumas of 240 h.p. each, one under each wing and one perched on the top of the fuselage. The pilots of the Koninklijke Luchtvaart Maatschappij (The Royal Dutch Air Line) are extremely pleased with the machine and say that it flies beautifully under all conditions.

An Efficiency Formula.

There is much dispute as to the relative efficiency of the two machines. One believes that it was Mr. Fokker himself who invented a formula for the comparative efficiency of aircraft. Anyhow the formula in question consists in multiplying the useful load (L) carried in the machine by the speed of the machine (V) and dividing by the horse-power of the machine. That is to say, the formula reads $L \times V \div H.P.$

This is undoubtedly a very fair way of measuring efficiency. But one can argue interminably about whether (L) consists of petrol or passengers or cargo and whether (V) is top speed or cruising speed or an intermediate travelling speed, and whether H.P. represents the horse-power of the engines all out when brand new, or whether it represents the horse-power at normal cruising speed, or whether it represents the horse-power given by the engines after a considerable amount of wear. And of course there is the additional difficulty of arriving at the real speed of the machine. There is very often quite a considerable difference between the speed of a machine as shown on an air speed indicator and the speed measured by a perfectly honest timekeeper over a measured course and the speed measured by photographic timing apparatus at an Air Service station such as that at Martlesham or Villa Coublay or Soesterberg. Therefore, as one is quite friendly with both Mr. Fokker and his right-hand man, Mr. Stephan, as well as with Mr. Koolhoven and his estimable director, Colonel Walaardt-Sacré, one does not care to commit oneself to any definite statement as to the relative efficiency of these two machines. They can only prove themselves on actual service.

But they both point to one very interesting fact. That is that the 200 h.p. class of engine, which a year or so ago threatened to be a drug on the market, is now likely to be an extremely popular size.

The 200 h.p. Engine.

The development of the light aeroplane during the last few years has given us entirely new ideas as to the useful load which ought to be carried by each horse in an engine.

Mr. Manning's Wren, built by the English Electric Company and flown by Sq. Ldr. Wright and Flt. Lt. Longton at the Lympne Meeting in 1923, showed that one man and his share of an aeroplane could be lifted by a nominal 3½ h.p. which gave about 8 or 9 h.p. But our big air line machines seem to indicate that something in the nature of 50 h.p. was necessary for each passenger.

Even the difference between the 40 m.p.h. or so of the Wren and the 100 m.p.h., more or less, of the air line machines did not quite account for the difference of 40 or more horse-power, which seems necessary to carry a man in an air-liner. And now, as the latest development of light aeroplanes, we have arrived at the Moth, which carries two people and reasonable luggage at approximately 80 miles an hour with a nominal 27 h.p. engine which really gives about 60 h.p. At its worst that reduces the horse-power per person from 50 to about 30.

The result of all these developments left the 200 h.p. engine right out in the cold. The big air line machines needed anything from 450 h.p. up to 800 h.p. or more in order to carry enough passengers or freight to pay for regular running charges such as petrol, pilots, mechanics and so forth,—without anything for establishment charges.

The D.H.50, with its one pilot and necessary mechanical attention and so forth to carry three or four passengers with 240 h.p. is not regarded as a commercial proposition from the air line point of view. And 240 h.p. for four or five people means, again, 50 to 60 h.p. per person. For special trips at special prices it may be a paying proposition, and as a flying machine it is probably the World's most pleasing air vehicle. Its trouble simple is that it is too big for the



DESIGNED FOR THE JOB.—The three-engined (Puma) Koolhoven passenger machine.

private owner—at any rate for the present and until rich men take to keeping air yachts—and it is not big enough for regular air line work.

Consequently, as may be seen, there has been practically no market in Civil Aviation for an engine between the 27-60 h.p. Cirrus, as used in the Moth, and the 400 h.p. or thereabouts, and upwards, of Napiers, Rolls-Royces, Bristol Jupiters and so forth, as used in the big air liners.

Then in 1925 arrived this craze for three-engined machines, the idea being that if one engine breaks or stops for any reason the machine can go on flying with two engines, and if one of them stops it can still prolong its glide to a respectable landing place on the third.

Personally one is by no means so enamoured of three-engined machines as are the leaders of commercial aviation. One would much rather have a single-engined machine which could be landed at about 20 miles an hour with the aid of slots and flaps, with a good oleo undercarriage for rough ground, and slotted ailerons to keep it under control when stalled, and a Savage-Bramson anti-stall gear to warn the pilot when he is going to stall, than a three-engined machine which had to land at about 50 miles an hour, if and when the last of its engines gave up the ghost.

The ability to land anywhere is a much greater guarantee of safety than is the imagined ability to fly anywhere. Still, there is the fashion for three-engined machines and it has got to be satisfied.

Load and Frequency.

We in this country are setting about it by building three-engined machines with engines of 400 h.p. apiece. With this total of 1,200 h.p. per machine, and reckoning that these machines will be as efficient as any of our other air line machines, and so will need about 40 h.p. per passenger, each machine will need thirty passengers to give it its full load.

Now the essence of the success of an air line is frequent service, as one has so often pointed out in this paper. If people could be assured that they would be able to find an aeroplane starting for Paris within half an hour of arriving at Croydon many more people would travel by air than do so to-day.

One scarcely imagines that even with its subsidy-monopoly Imperial Airways will be able to afford the luxury of sending off ten or twelve passengers with 1,200 h.p. to carry them. And if the service is dropped to one machine a day, no matter what time of the day it starts, the demand for seats, though it may not actually decrease, will certainly not increase as it should do.

If people have to be content to go to Paris just when the air line likes to take them they will probably find that the train service fits their convenience just as well. If a man has to be in Paris for dinner he can leave by train either at 9 or 11 and if he must do some work before leaving London he can leave at about 4 p.m. and get to Paris about 11 p.m.

One has deliberately taken the Paris route as the classic example because the Paris route has undoubtedly done more than any other to popularise passenger flying.

This does not in the least disagree from the doctrine that Captain W. H. Sayers has so often preached, to the effect that Commercial Aviation can best be made to pay where there are no other means of transport, as in Australia.

With smaller machines, with three engines of 200 h.p. each, carrying 12 or 15 passengers apiece on their total of 600 h.p. a more frequent service can be given and so more passengers can be attracted. Moreover if somebody can produce three-engined machines at a reasonably low price, there ought to be quite a good market for them abroad.

As the traffic on the Australian air lines grows, as it is growing, there will be sufficient passengers and goods to fill the three-engined machines with a total of 600 h.p. each. And the three engines certainly would give greater security, though the amazing efficiency of those Australian air lines, amounting to something close on 100 per cent., might be used as an argument that one engine per aeroplane is enough.

In addition there is the fact to be considered that there are many quite good engines, including the good old reliable Pumas of 240 h.p. and the Viper of 200 h.p. (of which A.D.C. Aircraft Ltd. has a great stock) which can be bought comparatively cheaply. And there are sundry 200 h.p. radials which are also comparatively cheap.

If the efficiency of aeroplanes goes on increasing as it may do and it ought to do (arguing from the performances of light aeroplanes), we may in time arrive at an aeroplane with a 200 h.p. engine carrying six or seven passengers and a pilot at 100 miles an hour. Already in the U.S. there is the Wright-Bellanca which has carried six passengers at 132 m.p.h. with 200 h.p.

Thus it may be seen that the smaller three-engined aeroplanes produced during 1925 are at any rate tending towards further progress in aviation.

On the whole, although a good deal of technical progress has been made public during 1925, there has been in fact very little advance during the year in that nothing startlingly novel has been disclosed. But all the various points which have been discussed in the course of this article do at any rate indicate that we are making steady progress in the right direction.—C. G. G.

SCHNEIDERUMOURS.

Work on Schneideracers has now begun, with the result that secrecy is once again in full blast. No doubt a Schneider committee has again been formed in secret. No doubt it has sat in secret and has wished lots of secret wishes for its secret secrets not to be divulged even secretly.

Therefore the following secret rumours, all obtained from secret though reliable sources, may be of interest.

Rumour I.—Mr. G. H. Handasyde, the designer of the Martinsyde Semiquaver, may or may not be connected with the design of one or more of the Saunders machines.

Rumour II.—Col. Bristow's machine, called "The Crusader," is being designed by Mr. Carter, late of the Hawker Company. By altering the last letter of Col. Bristow's name the makers of the engine and the builders of the machine may be revealed. About 800 horses will be used and the engine is said to be called the "Orion" and/or the "Hercules."

Rumour III.—A radial engine in a racer is not so impossible as it sounds. The saving of weight by the use of an air-cooled engine may make up for the increase in frontal area.

Rumour IV.—There *will* be *one*, and if it is successful *some*, of a breed known as the Supermarine-Napier S.5. The frontal area will be very small.

First and Only Statement of Fact. The mock-up of the small twin-engined boat seen by the curious at Southampton is not the Supermarine-Napier S.5 under construction.

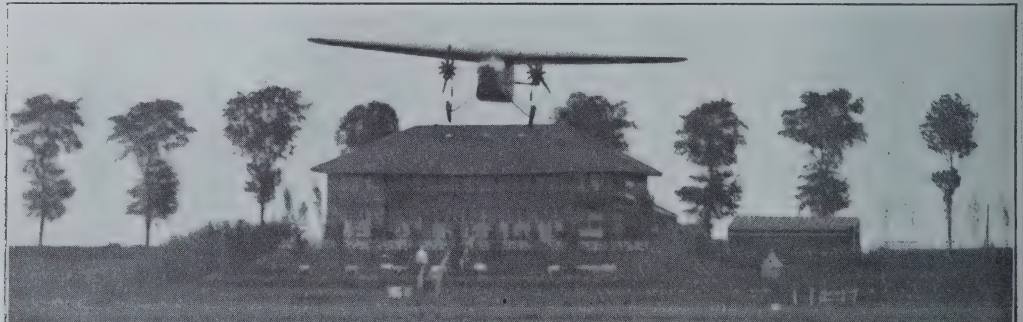
A Request. Sh! Please don't tell anyone I have told you any of this or the Air Ministry may be cross.

Incidentally if more than three British machines of sterling performance are available, why not make an entry on behalf of the Irish Free State. No doubt manufacturers would loan machines to the Free State Club (recently formed).

In this way we might avoid wasting machines which will cost a considerable amount to build.

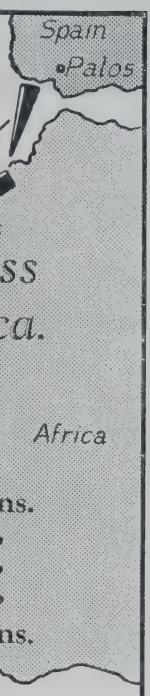
For the matter of that, if we produce a whole flock of challengers, why should not Canada and Australia also enter teams? Only they must make up their minds by Mar. 31.

G. D.



A CLEVER ADAPTATION.—The three-engined (Wright Whirlwind) Fokker, altered from a standard single-engined machine.

Continued Success for Napier Aero Engines



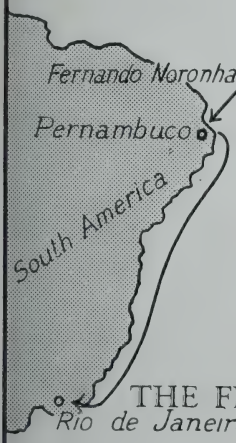
First Flight, with One Machine, across the Atlantic Ocean to South America.

Continuing his wonderful flight, Major Franco has now reached Rio de Janeiro in his Napier-engined Dornier-Wal flying boat.

He has progressed to date as follows :—

Palos to Canary Islands	812	miles in 7 hrs.	45 mins.
Canary Is. to Cape Verde Is.	1060	„ „ 8 „	15 „
Cape Verde Is. to Pernambuco	1777	„ „ 18 „	13 „
Pernambuco to Rio de Janeiro	1260	„ „ 11 „	50 „
Making a total of	4909	miles in 46 hrs.	3 mins.

No single machine of any type has ever before crossed the South Atlantic.



"This long non-stop flight, which for duration has rarely been surpassed, affords a further testimony to the excellence of British engine design and construction, for the Dornier-Wal flying boat—built in Italy—is fitted with two 450 H.P. Napier motors."

Daily Telegraph, 5.2.26

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LIGHT ON THE PARACHUTE QUESTION.

PREFATORY NOTE.

Everybody will agree that one of the most important matters concerning Service flying in all countries to-day is the equipping of pilots and passengers with parachutes. Quite early in the War 1914-18 THE AEROPLANE began agitating for the use of parachutes on active service. But, although the Germans used them and thereby saved the lives of quite a number of their aeroplane pilots and observers, the Royal Flying Corps, and afterwards the R.A.F., refused to use parachutes in aeroplanes though they did use them in kite balloons.

One of the chief arguments against the use of parachutes in aeroplanes was that a pilot who had the means of escaping by parachute would be tempted to abandon his machine if it were badly hit in a fight, and allow himself to be made prisoner (if over enemy territory) instead of either fighting to a finish or endeavouring to get home with a damaged machine.

Those who used this argument never seemed to consider that a pilot who had a sporting chance of getting out alive from a machine which had been shot to pieces or set on fire would go into a fight with a lighter heart and greater courage, and would be less tempted to avoid fighting unless he had some advantage in speed climb or numbers over his opponents. One may add, however, that those who supported the idea of using parachutes now occupy positions of importance in the Royal Air Force whereas the opponents of parachutes seem to have drifted into well-obscured obscurity.

Towards the end of the War a number of experiments were being made in the direction of producing satisfactory parachutes for aeroplanes. One remembers being shown a number of designs and actual parachutes when visiting the R.A.F. Headquarters at Hesdin about a week before the Armistice in 1918. But none of these was ever put into use during the War. And after the War the development of parachutes was neglected, chiefly one believes owing to pressure of work in other directions and lack of money, influenced by the fact that there is actually less need of parachutes in time of peace than in War.

During the War the parachutes which were used in kite balloons were the "Guardian Angel" made by the Calthrop Company, and "Salvus" made by Spencer Brothers, famous even before the War as balloonists and parachute jumpers. Both of these parachutes were of what is now known as the "static" type, and were carried in cases fixed to the balloon basket or the aeroplane, from which they were pulled out by the weight of the parachutist.

The obvious objection to such a type in aeroplanes is that in the event of a machine being shot to pieces, or breaking in the air, the parachute in pulling out of its case will probably be wound up in or damaged by the falling wreckage. And it is obvious that the only type suitable for aeroplane work is the "free" type with which a man can jump entirely clear of a machine, fall freely as far as he wished, and then open the parachute.

The German parachutes were of this type and those which we were developing towards the end of the War were also of the "free" type.

Among the free parachutes which were being developed in 1918 was one invented and designed by Lieut.-Colonel H. S. Holt, which he called the "Autochute." This parachute was described very fully in THE AEROPLANE, with illustrations, on Apr. 9 and on June 11, 1919. It struck one at the time as being particularly promising, because it was actuated by a device which seemed much more reliable than that of any other type which one had seen.

A small pilot-parachute was released from the pack, something like a knapsack or a cushion, which contained the main parachute, and the pull of this pilot-parachute drew out another larger parachute which in turn drew out the main parachute. The device seemed so obviously sensible that it struck one as being worth developing not only because of its mechanical principle but because the logical way in which it operated seemed likely to have a moral effect on the people who would have to use it. Consequently it seemed most regrettable that such a promising invention should not be further developed after the War even if there did not seem to be any pressing need for it.

After several years the further developments of aeroplanes, and their use over all kinds of dangerous country, made evident the fact that not only for our own private wars in India and Iraq but for mail-carrying and for air survey and exploration work, and for the use of pilots testing new and possibly dangerous experimental machines and for the pilots of high-speed racing machines, there was a very definite need for parachutes of the free type. The Americans, always quick to appreciate the need for practical things, proceeded to experiment with parachutes, and in due course adopted a parachute of a type invented by Mr. Irvine. And his parachute—which is known officially, owing to some error in registration, as the Irving parachute—was adopted by the U.S. Army and Navy Air Services.

The Irving parachute gave excellent results and, though nothing in the World can ever be perfect, it has, one believes, proved to be 100 per cent. efficient up to the present date. That is to say, nobody has ever been killed through an Irving parachute refusing to open when properly operated.

After the Irving parachute had been in use in the U.S. Air Services for something like two years, the Royal Air Force began to take notice of it and, after considerable unnecessary delay, an order was placed with the Irving firm for a supply of parachutes. When this order became known the permanent critics and newspaper enemies of the Air Ministry began asking questions about it in the House of Commons. And from those questions and their answers it became evident that if we had gone the right way to work we might have had a perfectly good English parachute issued as standard equipment to the R.A.F. even before we ordered the Irving parachute.

Personally one has the greatest respect for Mr. Irvine and and the ingenuity and industry which he has displayed in producing his parachute. But it is obvious that in matters of Service equipment we in this country should be self-supporting, and should support home industries. So, having in memory the promising results achieved by the experiments with Colonel Holt's parachute, one proceeded to get into communication with Colonel Holt with the idea of obtaining from him an explanation of why the Holt Autochute disappeared from the aeronautical firmament just after the War and has not appeared since.

As the result of this correspondence Colonel Holt has kindly consented to permit the publication in THE AEROPLANE of the reasons why nothing has been heard of the Autochute for the last few years.

His statement which is singularly clear and lucid is as follows:—

THE PARACHUTE CONTROVERSY.

Sir,—I have tried to avoid excursions into the columns of the Press on this subject but as you, Sir, have been good enough to invite me to give my version of the facts in your influential columns, I feel it is up to me to accept your invitation in the interests of British parachute makers, whose business has been so disastrously affected, as well as of my own Company.

The great decision of a year ago to equip the entire Air Force with parachutes was a step that will render memorable the Administration of the Minister who had the courage and foresight to initiate it, as I believe he actually did. I realise that all the matters under discussion are merely minor details.

In reply to a question in the House of Commons last Summer, it was stated that in addition to the order for 2,060 Irving Parachutes the Government were contemplating a further order for 700 a year for 5 years involving a total expenditure of £537,000. On learning this my Solicitors wrote to the Air Ministry pointing out that even if we agreed to submit the Autochute for trial on their terms it would only be a waste of Government time and money, as the present type of Autochute would very likely be obsolete in 5 or six years' time and it would be better to wait till they were requiring a fresh supply, and try the latest up-to-date Autochute.

Possibly this letter may have suggested to the Air Ministry the inadvisability of committing themselves so far ahead, to an existing type. At any rate I have since learnt that this proposal has been definitely abandoned. This fact makes a great difference in the position and blunts a good deal of rather obvious criticism.

Having decided that parachutes were necessary and very urgent, I, for one, would be very sorry to argue that the Authorities were not justified in ordering at any rate a temporary supply of American parachutes to carry on with. The safety of our Airmen must be the only consideration first and last. Whether they were justified in giving an order for £200,000 worth without taking any steps to ascertain whether this or an equally good parachute could have been made by a British firm, is perhaps more open to debate; and as a humble outsider I venture to put forward one or two considerations which seem to bear on the question.

Foreign representatives over here find it almost impossible to convince their Governments that our Air Ministry would have given a huge order for American parachutes, before trying out any Home Product. This in itself seems to constitute a severe indictment of the Air Ministry's policy.

When the Air Minister stated, in reply to a question in the House, that "The Irving Parachute is a proprietary article, and as the supply was very urgently needed and as no risk of possibly imperfect manufacture by an inexperienced firm could be run, it was considered inadvisable to give the order to any firm other than the Irving Co.," he was, it seems to me, conveying an undeserved slur on firms

THE FIRST CROSSING OF THE SOUTH ATLANTIC BY AIR.



LISBON to RIO DE JANEIRO, 4517 miles in 62½ flying hours.

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Whether a foreign article which basically infringes a Home Patent can be rightly regarded as a proprietary article in that country is perhaps a moot point. But there is probably no industry connected with aircraft that requires less specialised labour than parachute construction. Any efficient seamstress can learn to sew parachutes in a week or two and any ordinary saddler can make the harness and pack.

The Irving parachute and pack are quite ordinary (silk webbing and rigging should be quite unnecessary). And any umbrella frame maker could turn out the mechanism for opening the pilot parachute, at least as well as it is made in America. This umbrella mechanism was devised by me in 1918 and mentioned in my original patent but never used, as I considered it exceedingly dangerous—an opinion I still hold.

Irving had no patents and on the face of it there seems no sufficient reason why these parachutes should not have been made by British firms. The only obstacle was my original patent in 1918 for the compound free parachute system. And as I told the Air Minister at the time, I should have been willing to stand on one side and let any British firms make these parachutes sooner than that all that money and employment should go abroad. The Air Ministry could have given a reasonable order for these parachutes and meanwhile tried out the Autochute or any other that came on the scene.

What unfortunately the Air Ministry did not know, because at that time there was no one there who really understood the compound free parachute, was that, whereas it may take a very long time, perhaps even years, thoroughly to test out the "anchored" type for all kinds of machines, it is only a matter of weeks to effectually try out a free parachute.

To turn to the less important and more personal aspect of the question. The terms "pilot-parachute," "free," and "anchored," were devised by me in 1918 to distinguish my system from the older types such as the "Guardian Angel" and "Salvus," when I was fighting single-handed the battle of the "free" versus the "anchored" type of parachute.

I make no claim to the authorship of the *single* "free parachute," consisting of one parachute only, such as the French Ors. But the "multiple" or "compound free" parachute system, as I call it, consisting of two or more parachutes in one pack, was patented by me in 1918. I usually employ three parachutes and my system then bears some analogy to a triple expansion engine. There is yet another type made in France which I call the "pseudo-free parachute."

In the Spring of 1921 the Government agreed to test my parachute (the "Autochute") on condition that I provided and lent one at my own risk. It was taken up once and dropped with a dummy. The parachute failed to leave the container and the apparatus struck the ground with great violence and was damaged beyond repair.

On examination I discovered that the special knot which held the pack closed had been modified in such a way that it was a physical impossibility for the parachute to leave the pack. I knew the free parachutes contravened theories which the Authorities regarded as almost axiomatic in those days and I was considering whether it was worth the expense of constructing another parachute, when I learnt accidentally that the official in charge of the test had patented a parachute of his own which was under test by the Government.

From what the Air Ministry told me later there cannot be a shadow of doubt that the modification of the knot was a pure inadvertence on his part, made in the belief that the proper knot might get damaged in handling a heavy dummy weighing 180 lbs. So far as my experience goes there is no finer, straighter or more courteous body of men than the officers of the Technical Staff. But I felt that it put both this officer and myself in an unfair position.

Accordingly I informed the Air Ministry that I should not care to submit another parachute if the officer to be put in charge of the trial and report had a parachute of his own on trial. I was told in reply that they could not agree to any such stipulation.

Shortly after that the parachute section was disbanded and parachute research came to an end. It was even made illegal for an aviator to do a descent.

Meanwhile I went on quietly experimenting and improving the Autochute against the day, which I know must arrive, when the "free" parachute came into its own. From time to time I have offered to submit the Autochute for any trial, the more severe the better, but every time I am met with the reply that I must first drop that stipulation. This is what the Air Minister characterised in Parliament as my "refusal to afford him a reasonable opportunity of testing his latest type."

Whether my stipulation was reasonable is for others to judge. But at any rate the attitude of the Government seems hardly consistent with their expressed eagerness to find any improved parachute. The above then is the sole reason so far as I know why the Autochute has never been tried or even inspected by the Air Ministry.

The Press has referred to the Irving as "a crude imitation of an obsolete type of mine, but without my safety devices." On reflection I certainly would not go so far as to say that. But apart from the fact of its infringing one of my patents, there is a similarity in certain details.

If it is in any degree a conscious or unconscious copy of mine it may have come about in this way,—In the summer of 1921 the late Air Commodore Maitland, who knew the position of affairs, offered to carry out trials of the Autochute at Howden, and two live and a number of dummy drops were made before his death put an end to the tests. While they were going on the American officers waiting to take over the R.38 were at Howden and had frequent opportunities of examining the Autochute and seeing the trials.

A year later the Irving was brought out at McCook's Field. I am sorry the Irving Co. elected to call theirs the "Airchute" as it bears a rather close resemblance to "Autochute," but apart from that no criticism can fairly attach to them for their part in the matter. They infringed no American patents of mine and merely acted on the accepted American principle in making use of another man's work.

To criticise in the Press the work of a rival is always distasteful but it is difficult to avoid it entirely where there are only the two articles under discussion. Americans have referred to the Irving as 100% efficient. I should be sorry to claim anything like that for the Autochute. But two comparatively recent fatalities with the Irving, one to Gilbert in the U.S.A. Night Mail Service and the other to Corporal Wilson at Andover, could not have occurred with the Autochute owing to the difference of construction.

An article on the Irving appeared in the Press the other day by "An R.A.F. Parachute Instructor." He lays great stress on the vital importance of deliberately counting "three" after jumping and before releasing his parachute. For a novice this requires some coolness and presence of mind. With the Autochute this is quite unnecessary—he can and should rely on his Automatic Lanyard Release.

In answer to one of Sir Frederick Sykes' question concerning this method of release the Air Minister said, "it is possible to render the action of the device (the Irving) independent of the volition of the parachutist, and it is in fact made automatic when the parachute is tested with a dummy, but this method is undesirable because of the danger that premature release may involve entanglement with the aircraft."

This reply is open to misconstruction. Of course an automatic release of some sort is essential with a dummy. When the first Irvings came over a gramophone mechanism was rigged up as a delay release.

On my Solicitors pointing out that this was an infringement of one of my patents, they seemed to have made another effort to use a static or automatic lanyard and found that if they cut it down to 6 ft. long it was possible to use it. But of course no one would dream of using a 6 ft. lanyard for a live passenger going over the side—it would mean premature release and certain disaster every time.

I happen to know that the Americans are not now altogether satisfied with the Irving, the grounds of complaint being the method of opening the pilot parachute—which I am told is also giving trouble on this side—but more especially *the impossibility of using a static or automatic lanyard with it.* And it is just conceivable that a rather interesting situation may arise.

I am often asked as a "searching" question how many seconds my parachute takes to open, which only shows that experts still have rather a hazy idea of free parachute principles.

In conclusion—even if one-third of the Irvings are made by them over here, and they are to bring as it appears their own workpeople, it is difficult to see how this will help the British Parachute Industry.

(Signed) H. S. Holt, Lieut.-Col.

Concluding Remarks.

Colonel Holt's exposition of the situation is of considerable historical interest. As to the relative position of the Irving Parachute and the Holt Autochute so far as patents are concerned one cannot, of course, express an opinion. That is a matter which one imagines can only be decided in the Law Courts. But the fact remains that the Autochute did exist in practical form in 1918-19 and should have been developed by the Technical Department of the Air Force, the more so because the Holt parachute flares were regular Service equipment.

A very important point in Colonel Holt's argument is that concerning the testing and judging of his parachute by an official of the Air Ministry who was himself interested in

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parachute design. This is a position in which almost every inventor finds himself when he is offering an invention either to a Government department or to a great manufacturing firm. The judge in every case is almost always an expert designer of that particular kind of mechanism. And so the inventor not only has to prove that his invention is good, but he has to prove that he is a better inventor or designer than the very person who is judging his invention.

We have had exactly that same trouble in the development of metal construction in aircraft and the resulting arguments have held up the progress of metal construction for three years, at a very moderate estimate. And to a greater or less degree we have had precisely the same trouble over radiator designs, wireless gadgets, navigating instruments, and practically everything else. The official judge in every case is of course perfectly honest and straightforward, but he is an expert and he has his own designs in mind and consequently cannot help being prejudiced.

In exactly the same way the inventor of a new engine or of a new aeroplane who submits it to a manufacturing firm has to convince the firm's own chief designer that he, the inventor, knows more about the designer's job than does the designer himself.

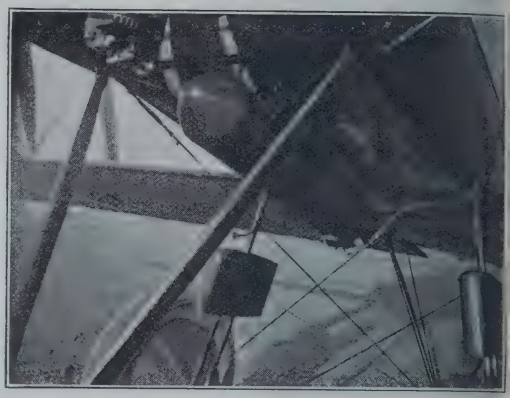
Therefore one is entirely in favour of Colonel Holt's claim that his parachute ought to be tested and judged by people who, even if they have ideas as to what parachutes ought to be, should not have any particular prejudice in favour of one design or another.

In other words not only parachutes, but engines, aeroplanes and all their fittings and gadgets ought to be tested by a committee of serving officers drawn from among the active service pilots of the R.A.F., and they should not be judged by the so-called technical experts of the Air Ministry, who obviously cannot have the same knowledge of the requirements of Service aviators as have those who do the actual flying of the Air Force.

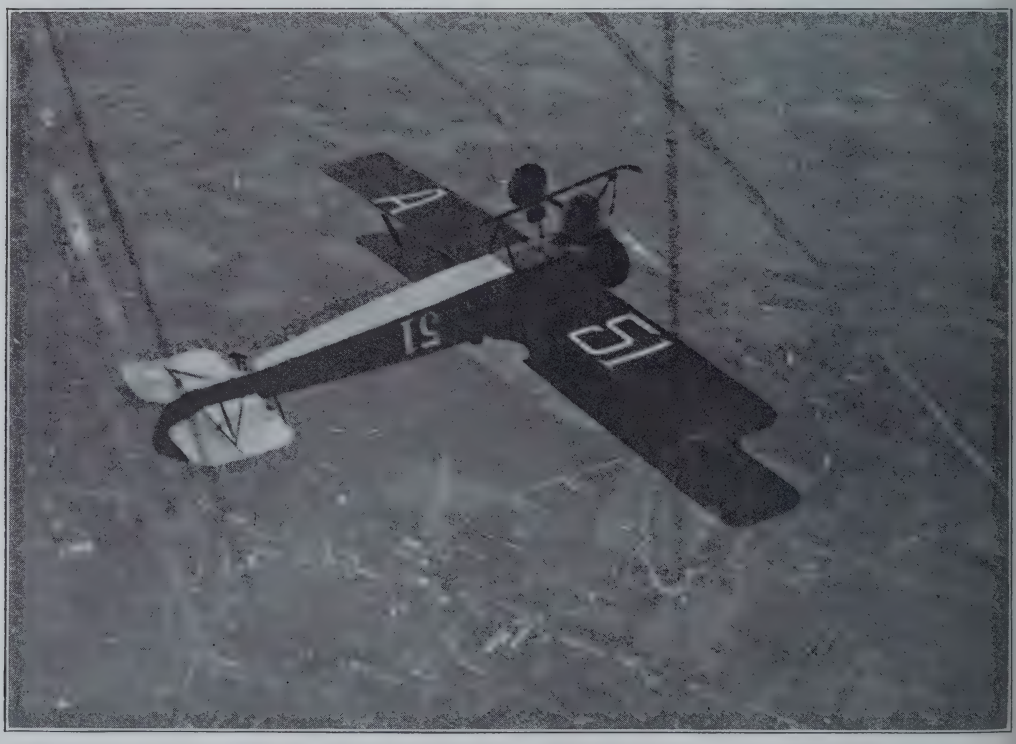
The only point on which one feels inclined to differ from Colonel Holt is in his reference to the two recent fatal accidents with the Irving parachute. So far as one can gather the accident to the U.S. Night Mail pilot was caused by his trying to get out of his machine with his parachute to avoid a landing in the dark and apparently releasing the parachute before he left the machine with the result that it fouled the tail unit of the machine in opening. The Andover accident was due to the victim failing to pull the release cord of his parachute pack, with the result that he fell to the ground without even asking the parachute to release itself.

Accidents of both these types must inevitably occur. But one judges from Col. Holt's letter that with the Autochut an automatic release may be fitted which is bound to release the parachute even though the parachutist himself may lose his head or even be unconscious at the time of leaving the machine.

In any case the whole argument is now clearly set forth in print and one hopes that the result will be ultimately the full development and adoption of British parachutes.—C. G. G.



HOW IT IS DONE.—The standard Avro gravity tank under the fuselage of Mr. van Damme's machine, which enables him to keep his engine going when flying upside down, as shown in the photograph below.

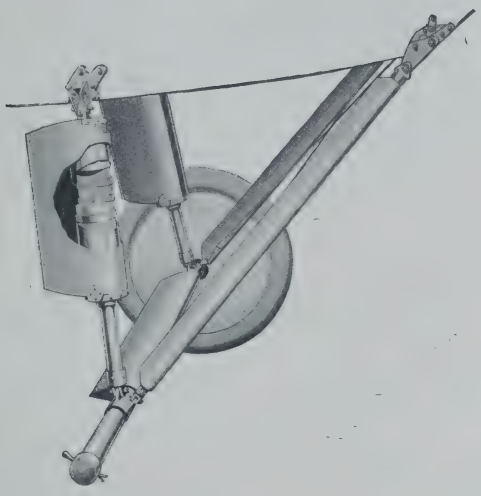


UPSETTING HIS GRAVITY.—Upside down flying in Belgium. Mr. G. F. van Damme, of the Belgian Army Flying School, at Wevelghem, flying his Avro fitted with a gravity tank underneath the fuselage to keep the engine going when the machine is inverted. The pilot's record upside down flight so far is 2 mins. 27 secs.

This announcement is the fourth of a series dealing with

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THE ROYAL AIR FORCE.

The London Gazette

Feb. 2.

General Duties Branch.—Flt. Lt. J. McFarlane, M.C., is granted a perm. comn. in the rank stated (Jan. 1). The following are granted perm. comns. as Plt. Offs., with effect from the dates indicated, and with seniority of the dates stated in brackets :—J. A. Tindall (Jan. 18) (Jan. 18, 1925); E. D. M. Hopkins (Jan. 26) (Jan. 26, 1925).

The following are granted S.S. comns as Plt. Offs. on probation with effect from and with seniority of the dates indicated :—R. H. Donkin (Jan. 22); S. H. C. Gray (Jan 23).

The following Plt. Offs. are promoted to the rank of Flg. Offs. :—F. W. Moxham (Sept. 14, 1925); R. H. Barlow (Jan. 31).

Plt. Off. on probation H. A. M. Weir is confirmed in rank (Oct. 1, 1925); Flg. Off. E. N. T. Edwardes (Lt., R.A.), is re-seconded for two years' duty with the R.A.F. (Aug. 1, 1925).

Flt. Lt. W. H. Mackenzie, A.F.C., is placed on the retired list at his own request, and is granted the rank of Sq. Ldr. (Feb. 3); Flt. Lt. W. T. S. Williams, D.S.C., is placed on the retired list on account of ill-health (Feb. 3); Flg. Off. C. R. Stewart is transferred to the Reserve, Class A (Feb. 2); Wing Cdr. J. P. C. Sewell, O.B.E., is transferred to the Reserve, Class C (Dec. 5, 1925). (Substituted for notification in *Gazette* of Dec. 8, 1925).

The following relinquish their S.S. comns. on account of ill-health (Feb. 3) :—Flg. Off. C. Wilson; Plt. Off. on probation H. W. Miller. C. F. L. Holford, Lt., R.M., Flg. Off., R.A.F., relinquishes his temp. comn. on return to the Royal Marines (Jan. 21). (Substituted for notification in the *Gazette* of Jan. 26.)

Accountant Branch.—The following Flg. Offs. are granted perm. comns. in the rank stated (Feb. 3) :—F. R. Barton, R. G. Dyer.

Medical Branch.—C. J. S. O'Malley is granted a S.S. comn as a Flg. Off. for three years on the Active List, with effect from and with seniority of Jan. 14; N. I. Smith, M.B. (Capt., R.A., T.A.), is granted a S.S. comn. as a Flg. Off. for three years on the Active List, with effect from and with seniority of Jan. 25, and is seconded for employment at King's Cross Hospital, Dundee, with effect from that date; Flt. Lt. T. L. P. Harries, M.B., is transferred to the Reserve, Class D.2 (Jan. 30).

Reserve of Air Force Officers.—The following are granted comns. in Class A.A., General Duties Branch, as Plt. Offs. on probation :—K. P. L. Bowen, V. Schofield, J. H. A. Wells (Jan. 18); D. Abbott, N. M. Browning (Jan. 19).

The following are confirmed in rank (Jan. 28) :—Flg. Off.—H. W. Smith. Plt. Offs.—J. Gallacher, H. Tulloch.

Flg. Off. G. C. Sclater is transferred from Class A to Class C (Jan. 30). The following are transferred from Class B to Class C :—Flg. Offs.—J. Durward (Jan. 30); G. L. G. Watson, M.M. (Feb. 2). Obs. Off.—B. J. Paget (Jan. 30).

The following Flg. Offs. resign their commissions :—V. W. Burgess, A.F.C. (Feb. 2); D. Davidson (Jan. 10).

Auxiliary Air Force.—General Duties Branch.—The following to be Flg. Off. :—No. 603 (City of Edinburgh) Bombing Squadron :—W. O. B. Winkler (Feb. 2).

Appointments.

Week ending Feb. 8.

General Duties Branch.—Wing Commanders H. L. Reilly, D.S.O., to H.Q., Iraq, for Air Staff (Signals) duties, 31/12. L. A. Pattinson, D.S.O., M.C., D.F.C., to Station H.Q., Andover, to command, 12/2.

Squadron Leaders H. E. M. Watkins, A.F.C., R.D., to R.A.F. Training Base, Leuchars, 3/2. J. B. Graham, M.C., A.F.C., to No. 207 Sqdn., Eastchurch, 20/1. A. L. Gregory, M.B.E., M.C., to Special Duty List, for duty as Head of No. 10 Section, R.A.E., S. Farnborough, 5/2. H. M. Probyn, D.S.O., to School of Army Co-operation, Old Sarum, 4/2. A. Durston, A.F.C., to No. 480 Flight, Calshot, 18/1. A. H. Stradling, O.B.E., to Station Commandant, Hinaidi, 1/1. J. C. P. Wood, to No. 4 F.T.S., Egypt, 12/12.

Flight Lieutenants S. P. Simpson, to H.Q., Egypt, 4/1. A. H. Goldie, to No. 4 F.T.S., Egypt, 8/1. S. F. Vincent, A.F.C., to Heliopolis Details, Egypt, 12/12. N. P. Dixon, A.F.C., to Station Commandant, Hinaidi, 8/1. C. Chapman, D.S.C., to No. 14 Sqdn., Palestine, 20/12. H. L. P. Lester, to No. 4 F.T.S., Egypt, 21/12. J. G. S. Candy, D.F.C., to Station Commandant, Basrah, 5/1. A. R. Churchman, D.F.C., to H.Q., Palestine, 12/12. W. A. Duncan, to H.Q., Iraq, 1/1. F. Thomasson, D.F.C., M.M., to No. 6 Sqdn., Iraq, 1/1. L. Eardley-Wilmot, to H.Q., Egypt, 9/1. B. A. Malet, D.F.C., to H.M.S. *Eagle*, 27/1. W. G. Preston, D.F.C., to No. 100 Sqdn., Spittlegate, 28/1. R. A. Courtney, M.B.E., to No. 3 Group H.Q., Spittlegate, 9/2. H. C. Calvey, to No. 23 Sqdn., Henlow, 20/1. C. A. Bouchier, D.F.C., to No. 41 Sqdn., Northolt, 20/1. H. E. Searle, to No. 32 Sqdn., Kenley, 18/1. A. J. E. Broomfield, D.F.C., to Aircraft Depot, India, 17/12.

Flying Officers C. O. Towler, D.S.M., to H.Q., Mediterranean, 12/12. T. Sullivan, to H.Q., Palestine, 12/12. J. W. Rose, D.S.M., to No. 208 Sqdn., Egypt, 19/12. A. E. Conolly, to H.Q., Iraq, 1/1. R. B. H. Jackson, to No. 30 Sqdn., Iraq, 29/12. F. E. C. Benstead, to Inland Water Transport, Iraq, 8/1. D. C. Prance, to No. 29 Sqdn., India, 6/1. J. S. Phillips, to No. 4 F.T.S., Egypt, 12/12. R. A. King, to No. 5 Sqdn., India, 28/11. C. Snow, to R.A.F. Reception Depot, West Drayton, 3/2. N. S. Paynter, to No. 60 Sqdn., India, instead of to Aircraft Depot, 18/11. B. H. C. Russell, to No. 5 Sqdn., India, instead of to No. 20 Sqdn., 18/11. D. C. Prance, to Aircraft Depot, India, instead of to No. 60 Sqdn., 18/11. L. W. Lane, M.C., to Aircraft Park, India, 11/12. W. J. M. Akerman, to No. 28 Sqdn., India, instead of to No. 31 Sqdn., 18/11. A. B. Smith, M.C., to No. 20 Sqdn., India, instead of to No. 31 Sqdn., 18/11. G. I. C. Peacocke, to Aircraft Depot, India, instead of to No. 27 Sqdn., 18/11. A. D. Davies, to Aircraft Depot, India, instead of to No. 31 Sqdn., 18/11. F. V. Beamish, to No. 31 Sqdn., India, instead of to No. 5 Sqdn., 18/11. E. C. de V. Lart, to No. 60 Sqdn., India, instead of to No. 27 Sqdn., 18/11. A. F. Hutton, to Aircraft Depot, India, instead of to No. 5 Sqdn., 18/11. G. W. P. Irwin, to Aircraft Depot, India, instead of to No. 31 Sqdn., 18/11. J. C. Marcy, to Aircraft Depot, India, instead of to No. 5 Sqdn., 18/11. D. Robinson, to Aircraft Depot, India, instead of to No. 5 Sqdn., 18/11. F. T. Eades, D.F.C., to No. 58 Sqdn., Worthy Down, on transfer to Home Estab., 7/1. W. S. Allen, to Station H.Q. Northolt, 5/2. W. R. Heywood, to No. 1 Stores Depot, Kidbrooke, 4/2 (Hon. Flt. Lt.) G. N. Carroll, to R.A.F. Base, Calshot, 8/2. N. H. F. Unwin, to School of T.T. (Men), Manston, 8/2.

Pilot Officers H. D. Gunton, to No. 2 F.T.S., Digby, 30/1. W. E. Symonds, to No. 216 Sqdn., Egypt, 7/1.

Medical Branch.—Flight Lieutenants T. J. D. Atteridge, to C.F.S. Upavon, 2/2. C. V. D. Rose, to Palestine General Hospital, 12/12. B. F. Haythornthwaite, M.B., B.A., to H.Q., Iraq, 3/1. C. A. Lindup to No. 5 Sqdn., India, 29/12.

Flying Officers L. I. Hyder, to School of T.T. (Men), Manston, 28/1. E. J. Jenkins, to Research Laboratory and M.O.S. of I., Hampstead on appointment to a S.S. Comn., 1/2. Flying Officer (Dental) H. R. Peek, to H.Q., Cranwell, on appointment to a Temp. Comn. on attachment from Army, 1/2.

Stores Branch.—Flight Lieutenants A. M. Saywood, to H.Q., Iraq, 1/1. J. Walker, to Heliopolis Details, Egypt, 12/12. F. Petch, O.B.E., to H.M.S. *Eagle*, 28/1. Flying Officers S. R. L. Poole, to No. 3 Wing H.Q., India, instead of to Aircraft Depot, 18/11. G. C. Wilson, to No. 208 Sqdn., Egypt, 12/12.

Accountant Branch.—Wing Commander H. G. Jones, to H.Q., Cranwell, for duty as Command Accountant, 8/2. Flight Lieutenant J. H. B. Carson, to R.A.F. Base, Malta, 12/12. P. Hay, M.C., to No. 216 Sqdn. Egypt, 11/12. Flying Officers C. W. Price, to H.Q., Egypt, 5/1. D. F. A. Clarke, to No. 4 F.T.S., Egypt, 5/1.

Chaplains' Branch.—The Rev. J. H. P. Still, B.A., to H.Q., Palestine, 12/12.

Legal Branch.—Flight Lieutenant G. S. Marshall, O.B.E., to Special Duty List on appointment to a Temp Comn. for legal duties in Department of J.A.G., 14/12.

A Royal Investiture.

H.M. the King held an Investiture at Buckingham Palace on Feb. 4.

Among those in attendance upon His Majesty was Air Marshal Sir John Salmond (Principal Air Aide-de-Camp).

Among those present was Group Captain L. W. B. Rees, V.C.

The following officers of the Royal Air Force were among those introduced into the presence of the Sovereign when the King invested them with the Insignia of the respective Divisions of the Orders into which they have been admitted :—

The Most Honourable Order of the Bath, Military Division, Knight Commander:—Air Vice-Marshal Sir Geoffrey Salmond.

The Most Excellent Order of the British Empire, Commander Military Division:—Wing Commander Augustine ap Ellis, R.A.F.

The Distinguished Flying Cross:—Flight Lieutenant William Cumming, R.A.F.

The Fleet Air Arm.

The Times of Feb. 8 states :—

It is notified in Fleet Orders that the first course of Naval officers specialising as pilots for the Fleet Air Arm have now completed deck landing training, and have been appointed to Fleet Air Arm Flights for full flying duties. The Lords of the Admiralty desire to place on record their appreciation of the very satisfactory results obtained by the officers concerned.

[Perhaps the Air Council will follow suit by expressing their appreciation of the efforts of each batch of pilots who pass successfully through each F.T.S. Appreciatory paragraphs are always certain of being published in the newspapers and are a good advertisement for everybody concerned.—Ed.]

Apprentice Clerks in the R.A.F.

The Air Ministry announces that sixty vacancies exist in the R.A.F. for well educated boys between the ages of 15½ and 17 to enter as Apprentcie Clerks. Approximately forty of the posts will be filled by means of an open competition which will be held by the Civil Service Commissioners at various centres in April, and the remaining twenty by direct entry of boys who have obtained an approved school certificate. Successful candidates will be required to engage for a period terminating twelve years after reaching the age of 18, with the possibility of re-engaging to complete time for pension. Detailed information regarding the apprentice scheme can be obtained from the Inspector of Recruiting (Apprentice Clerks), 4, Henrietta Street, Covent Garden, London, W.C.2.

Boys entered under this scheme undergo a two years' course of training in clerical duties, typewriting, shorthand, book-keeping and practical office routine, during which time their general education is continued under qualified schoolmasters.

The apprentices are paid 7s. per week for the first year and 10s. 6d. per week afterwards until they have both attained the age of 18 and have been posted for duty after passing their final examination when they receive pay of at least 21s. per week. A number of the boys who pass out well are appointed as leading aircraftsmen, with commencing pay of 31s. 6d. per week.

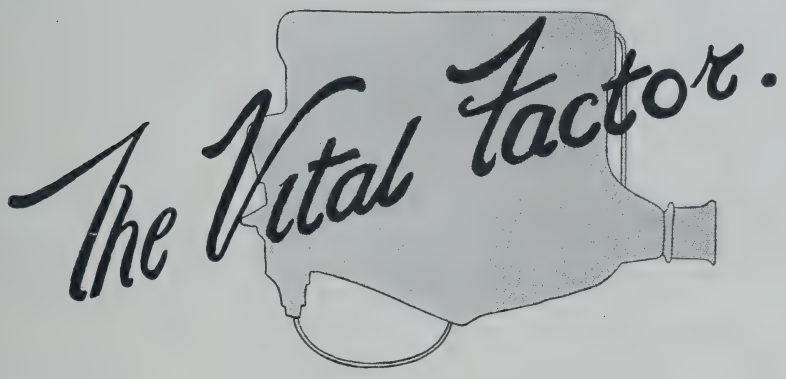
In addition, there is later in their career the possibility of volunteering to become serjeant pilots.

A Service Cairo-Cape Town Flight.

The current number of the Air Force List gives the personnel of the R.A.F. Cape Flight as follows :—Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., *p.s.a.*; Flt. Lts. E. C. Emmett, M.C., D.F.C., W. E. Reanson, P. H. Mackworth, D.F.C., E. J. L. Hope, A.F.C., L. E. M. Gillman; and Flg. Offs. A. A. Jones and W. L. Payne. Their temporary postal address is R.A.F. Depôt, Middle East (Aboukir).

The route of the flight will be that originally surveyed by

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the R.A.F. in 1919, with the following ports of call :—Assuan, Khartum, Malakal, Mongalla, Kisumu, Mwanza, Tabora, Abercorn, Broken Hill, Livingstone, Bulawayo, Pretoria, Johannesburg, Bloemfontein and Cape Town.

The machines to be used are six Fairey III D.s fitted with land undercarriages and 450 h.p. Napier Lion engines.

The expedition will start about Mar. 1.

India to England.

For some months a few people, outside the Authorities of the Air Ministry and the R.A.F. Command in India, have known that there was a project in being for an R.A.F. officer to attempt to fly in record time from India to England. Out of respect for the officer who is to do the flight the secret has hitherto been treated with respect by Service people and those in touch with them. Now, however, *The Morning Post* has "released" the scheme.

At present there is no need to say more than that the Karachi correspondent of *The Morning Post*, in a message dated Jan. 30, states :—

Flt. Lt. Oliver intends to make an aerial dash from India to England. In a D.H.9 two-seater biplane, fitted with a 240 h.p. Siddeley Puma engine, Flt. Lt. Oliver hopes to reach London from here within five days

His flight is entirely a private venture. No official or semi-official aid has been granted, and the pilot has himself had to make the arrangements for refuelling at the various aerodromes on the way. This will, therefore, be the first privately organised long-distance flight to be attempted since the war.

The D.H.9 is a war-time machine, and the D.H.50 in which Cobham flew to Rangoon and back with Sir Sefton Brancker as passenger, is a recent development of it.

Air Publications.

The following publications have been received from the Air Ministry :—

"Regulations for the Auxiliary Air Force and for County Associations." Air Publication 968 (1st edition, Oct. 1925). H.M. Stationery Office, Kingsway, W.C.2. 3s. 6d. net.

"Regulations for the Royal Air Force Reserve including the Reserve of Air Force Officers and Men of the Royal Air Force Reserves." Air Publication 938 (2nd edition, Nov., 1925). H.M. Stationery Office, Kingsway, W.C.2, 4d. net.

R.A.F. SPORTS AND PASTIMES.

Rugby Football.

R.A.F. v. Bath :—The R.A.F. representative team won their first match on Feb. 6, when they beat Bath at Bath by two goals to nil.

The Sporting Life and Sportsman in its account of the game says :—

On a very heavy ground the Royal Air Force gained a good win over Bath by two goals to nil, and certainly deserved to finish on top.

The two packs of forwards were evenly matched, but outside the Air Force had a big pull, for the Bath backs made many bad mistakes in handling and seldom looked like scoring, the only man among them to do well being Slade at full back.

Cyril Lowe, the old international, was in great form, and got a good try and kicked the two goals. There was some splendid tackling by both sides, and Lowe especially was good in stopping Gibbs, the Bath wing. Many free kicks were awarded, the Airmen especially infringing through off-side, and it was O'Malley, their winging forward, who was the worst defaulter.

Bath's poor display was in a large measure due to Banks, the outside half, being unable to take his passes. In the first ten minutes he receive a kick in the head, and after the game it was found that he knew very little of what had been happening.

After Lowe, the most noticeable backs on the Force side were Bryson, the Earl of Bandon, and Russell. There was no score at half-time, but in the second half Wintour got over and Lowe scored between the posts and kicked both goals.

A Date.

The first of the three matches for the Inter-Service Rugby Championship will take place at Twickenham next Saturday, Feb. 13, at 3 o'clock, when the Air Force play the Navy. The results of this match in previous years have been : 1920, Navy won by 12 points to 3; 1921, Navy won by 33 points to 3; 1922, Navy won by 9 points to 6; 1923, R.A.F. won by 3 points to 0; 1924, Navy won by 16 points to 9; 1925, R.A.F. won by 3 points to 0.

The Navy have a very fine team in spite of the fact that they have lost joiner Husson, their scrum-half, who unfortunately broke his leg during the game against Bristol on Feb. 3. In spite of the handicap the Navy beat a very strong Bristol side by two tries to one.

The R.A.F. have only won one of their four representative matches this season, and Plt. Offs. F. V. Beamish and Marcy, and Cpl. Wale, of last year's team, have been posted overseas.

However, it is sure to be a great battle, and one hopes that the R.A.F., past and present, will roll up in their thousands on Saturday.

Hockey.

R.A.F. v. Staff College :—The R.A.F. beat the Staff College, Camberley, at Camberley, on Feb. 6, by 7 goals to 3. The R.A.F. were the better team from the start and were leading by 2 goals at half-time. Flg. Off. Bingham-Hall scored 3 goals, Plt. Off. Vines 2, and Flt. Lt. Hampton and Flt. Lt. Wigglesworth, one each.

The Cranwell Magazine.

In his report at the Inspection of Flight Cadets in December, 1925, extracts from which appear in the Spring Number of the *R.A.F. Cadet College Magazine*, the Commandant stated that a total of 1,499 hours 45 minutes were flown during the last term. He also said that the discipline had been good, the general health of the Flight Cadets very satisfactory, and the standard of efficiency in physical training good. An Association of Old Cranwellians had been formed and a Rugby Match had been played between the Cadet College and the Old Cranwellians resulting in a win for the former by 27 points to 6.

Sq. Ldr. D. O. Mulholland, A.F.C., who was posted to the Staff of the Cadet College last July, after nearly three years with the Armoured Cars in Iraq, contributes an interesting little article on "A Day with the Armoured Cars in Northern Iraq," in this number. Another good thing is Sq. Ldr. Cochrane's account of a shooting trip in North Persia, one of the many sporting expeditions available to the R.A.F. in the Iraq Command with local leave. It is well illustrated.

Sjt.-Major Gorwood continues his Hints on Athletic Training in this number and deals with the half-mile, the mile and cross-country running. There are any amount of interesting and amusing articles in this number, and "Sintan" has worked very hard to fill in all the corners.

The Yarmouth Command Dinner.

The sixth Annual Re-Union Dinner of the Gt. Yarmouth Command, R.A.F., will be held at Pritchard's Restaurant 79, Oxford Street, W.1, on Saturday, Feb. 27, at 7 for 7.30.

Tickets, 7s. 6d. (excluding wine), are obtainable from R. Smith, 382, Hoe Street, Walthamstow.

SOMETHING NEW IN PARACHUTES.

The Manchester Guardian of Feb. 3 states :—

A piece of iron three yards long crashed from a fighting aeroplane into the space outside the house and business premises of Mrs. Williams at Connah's Quay yesterday. Mrs. Williams had just gone indoors when she heard a terrific bang outside, and rushing out, found the iron, from which smoke appeared to be proceeding, embedded in the ground. Fearing that a bomb had accidentally fallen from the aeroplane she raised an alarm and a crowd quickly gathered, but none dared touch the supposed bomb.

It was noticed that the aeroplane, which could be observed in the sky, was trailing a parachute, and it appeared later that the fallen iron was the aeroplane's parachute casing, which had broken loose. The aeroplane was from Shotwick aerodrome. Luckily no one was injured by the accident.

A nine-foot piece of iron as a parachute casing seems to justify the objection of the opponents of the parachute that such an apparatus is unduly heavy. But what type of parachute was it? The Irving cushion one knows, and the Holt knapsack, and the Calthrop frying-pan,—but the nine feet of iron type is a stranger. Anyhow it was lucky that the house parried the chute.—Ed.

THE HANDLEY PAGE W.10.

By the time these notes appear the first of the new W.10s will almost certainly have made its maiden flight. When one visited Cricklewood last Friday the machine was just receiving its final touches. Men were in the saloon laying down the carpets and the chairs were about to be installed. The machine was simply waiting for the delivery of its airscrews and its airworthiness certificate papers.

The second W.10 was being assembled and that should be out in a fortnight. The third and fourth were well on the road to completion and will both, barring accidents, be out by the end of March. It is expected that the first one will be delivered to Imperial Airways by the end of this week.

The reason that the firm have been able to get on with these machines so quickly is that aero-dynamically they are similar to the W.8, W.8b, the Hamilton and the Hampstead and all the stressing and other work was passed by the Air Ministry without the usual months of delay. The chief difference between the W.10 and the previous W.8 types are in the tail and the cabin. The old forward luggage compartment is done away with entirely and the cabin now extends right up to the pilot's seat. Fourteen passengers can be seated in comfort. Instead of the old type W.8 rudder a symmetrical oblong rudder is fitted, balanced at a point about a third of its width from the leading edge. This type is now fitted to the Hampstead and one gathers that it is a great improvement.

The two Napier engines are fitted about nine inches further forward than in previous models.

The speed of the machine is expected to be about 120 m.p.h. and the cruising speed should be about 105 m.p.h. The machines are finished off in the now familiar blue and white colouring of Imperial Airways. These four machines are likely to do the lion's share of the Continental traffic in the coming season.

Weather permitting, the W.10 should make its first test flight to-day (Wednesday). Mr. Hubert Broad, who tested the Handcross, and has been testing production Hyderabads lately, will do the makers' tests prior to handing it over to Imperial Airways Ltd.

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THE LAUNCH OF THE AUSTRALIAN SEAGULL.



GOING IN.—The launch at Woolston on Saturday last of the Supermarine-Napier Seagull, the first of a batch of six ordered by Australia. The first duty of the Seagu lls will be a survey of the Great Barrier Reef.

On Saturday at 08.30 hrs. a large party left Waterloo on a visit to the Supermarine Aviation Works, Ltd., to see the launching of the first of a batch of six Supermarine Napier-engined Seagulls which have been ordered for the Australian Air Force. The ceremony was performed by Lady Cook, wife of Sir Joseph Cook, the High Commissioner for Australia.

On arrival at Southampton the party were met by a fleet of motor-buses and, after a circular tour of Hampshire, duly arrived at the Supermarine Works which were gaily decorated with Australian flags.

As there was half an hour or so before the launching ceremony was timed to go off, the party were allowed to wander round the works. Much interest was taken in the Southampton flying boats in various stages of construction. As the detail construction of these is still on the secret list one naturally cannot say anything about them.

At 11.30 hrs. everyone made for the shed in which the Australian Seagull No. 1 was sitting. The problem of how successfully to break a bottle of champagne without breaking the Seagull had been given a great deal of thought by the Design Staff of the Supermarine Aviation Works Ltd. One understands that for a fortnight experiments had been taking place, though in all tests one was assured that water was substituted for champagne on the grounds of economy.

The final result was a two-point suspension from hooks by strings at the junction of which the champagne bottle swung. It was so arranged that in its trajectory it was bound to strike the sharp end of the boat on which was the anchor to receive the shock. The bottle was then tethered out by a piece of string in a direct line in front of the boat, making a Y with the two suspension strings. All that Lady Cook had to do to break the bottle was to cut the leg of the Y with a pair of nail scissors.

Accordingly, at 11.30 hrs., Lady Cook approached the string armed with a pair of nail scissors. After saying "I name you Australian Seagull No. 1, good luck to you and to all who fly in you," she brought the nail scissors into action and the bottle swung down and hit the nose of the machine true with a resounding mixture of bang and pop. And the accuracy of the calculations of the Design Staff was vindicated.

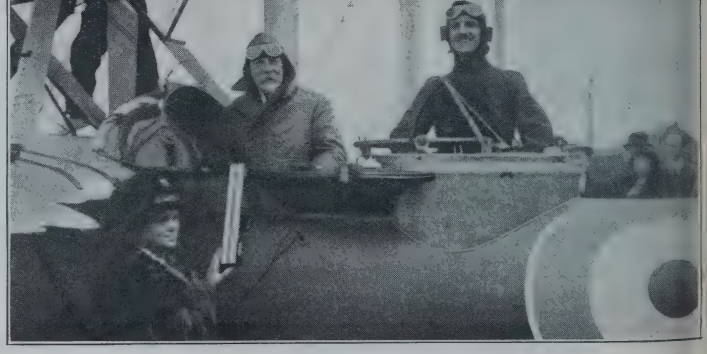
Sir Joseph Cook, accompanied by Sq. Ldr. R. S. Brown, Liaison Officer to the Royal Australian Air Force, got into the rear cockpit of the machine, and Mr. H. C. Biard got into the pilot's seat and the machine was let down the slipway into the water. It took off after an astonishingly short run, and after a few turns over the water Mr. Biard brought it down in faultless style.

Although this was Sir Joseph's maiden flight and although it was raining and blowing and there were low clouds, he said that he thoroughly enjoyed the flight. It seems therefore that under perfect conditions he would be a regular "air fan" and he assured those present that it would by no means be his last flight.

Then everyone re-embarked on the fleet of motor-'buses and, after another short tour of Hampshire, arrived at the South Western Hotel where an excellent lunch was provided, over which Mr. G. L. Wood, Chairman of the Supermarine Aviation Works, presided.

The Chairman, after a few words, handed over to Squad. Comm. Biard, who said how glad he was to see so many people present that day. He was very glad for his firm to have had the honour of taking Sir Joseph Cook for his first flight. He said he felt sure that Sir Joseph's landing that day at Woolston was every bit as good as that of his great namesake and forerunner, Capt. Cook, in Australia in the far-distant days.

Sir Harry Brittain, who is a director of D. Napier and Son Ltd., and joint host, then rose. Sir Harry paid a tribute to the work of the Australian Air Force in the War and he enlarged upon his own recent visit there. He said how thoroughly he had enjoyed his stay over there and could



A BAPTEME DE L'AIR.—Lady Cook seeing-off Sir Joseph Cook, High Commissioner for Australia, on his maiden flight. With him is seen Sq. Ldr. R. S. Brown, liaison officer to the R.A.A.F. and the R.A.F. Sir Joseph is now enrolled as a fervent believer in Aviation, on whom Australia may rely to support the cause of adequate Air Defence.

Another Record!

THE wonderful flight from Palos de Moguer, Spain, to Pernambuco, Brazil, adds one more record to the already long list of notable achievements obtained by machines fitted with

B T-H

Magnetos

COMMANDANTE Franco and Captain Ruiz de Alva achieved this flight, a distance of 3,150 miles, in 32 hours, on a Dornier-Wal air boat equipped with Napier "Lion" Engines.

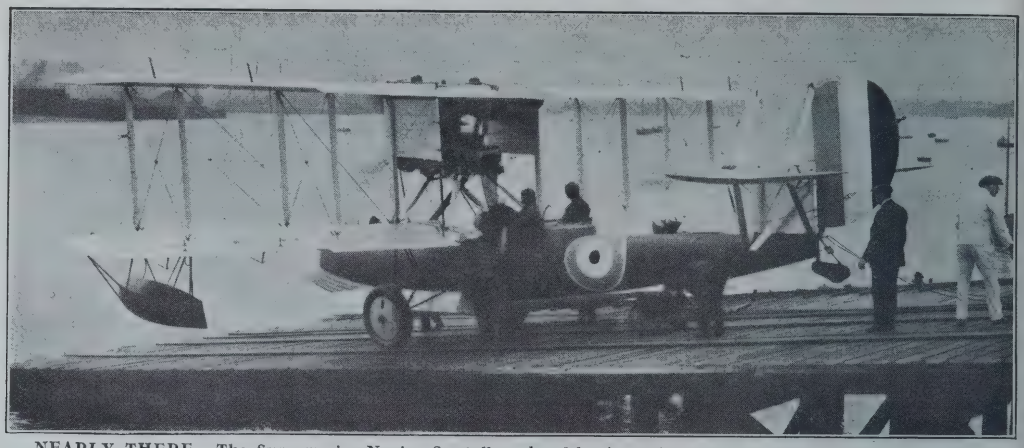
Previous records created by machines fitted with

B.T.H. Magnetos

include

1st and 2nd in every Aerial Derby.
1st in every King's Cup Race.
R.33, First Crossing of the Atlantic.
Mr. Alan Cobham's remarkable flight from Croydon to Zurich and back in 14 hours with a D.H. "Moth."
Etc., etc.

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British Thomson-Houston
Company, Limited,
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Alma Street : : Coventry.
Works: Rugby, Birmingham, Willesden, Coventry, Chesterfield.



NEARLY THERE.—The Supermarine-Napier Seagull, ordered by Australia, nearing the water. Mr. H. C. Biard was the pilot and Sir Joseph Cook and Sq. Ldr. R. S. Brown were the passengers.

not exaggerate the importance of an air service between London and Australia which would bring Sydney within 9½ days of London. He touched on the subject of the threatened economy in aircraft and urged that in any steps to economy, manufactured aircraft reserves should not be allowed to fall below the danger point. He then proposed the toast of Lady Cook, Australia and Australian Aviation, with musical honours, in which musical honours he and Mr. Victor Scott Payne sang the leading rôles.

Sir Joseph Cook said that he had thoroughly enjoyed his first flight. He could assure those present that it would by no means be his last flight and he said that he had felt the utmost confidence in Mr. Biard's piloting. He said that that day Mr. Biard had enrolled in the ranks of those intensely interested in aviation one who would in the future do his utmost for the cause of aviation.

He said that the defence of Australia was a matter of self-respect in a population of six millions with a trade of three hundred and twenty million pounds sterling a year That order for flying boats was part of that defence policy, and he ventured to say that Australia, which was spending five millions a year on defence, was in proportion to its population, doing its share in the defence of the Empire.

Australia was aiming at standardisation of its armament parts with those of the rest of the Empire so as to be ready to take its share in the defence of their common heritage. It was for this reason that they came to England for their aircraft.

Lord Apsley, M.P. for Southampton, then proceeded t toast the Guests. He said he was not sure whether he ough to regard himself as a host or as a guest, but as the Supermarin Works were in his Constituency he felt that he should sid with the hosts that day. He spoke with enthusiasm c Australia, whence he has recently returned.

Sir William Cullen, Chief Justice and Lieut.-Governor c New South Wales, made a moving speech in which he sai that the one thing he always noticed about England wa that its inhabitants always looked upon themselves as out-of-date and behind the times. He assured those present tha his experience of England has always been that it is a fin country and that there is no people in the World to com pare with them and that all the Dominions realised tha fully.

Sir James Allen, High Commissioner for New Zealand said that although New Zealand had not placed many order for aircraft yet, he hoped that they would in the near future

After which, for the last time, we re-embarked in the 'buse for the station and returned to Town. In the train every one was presented with a set of five photographs of th launching ceremony taken by the Supermarine firm. A these photographs were taken at 12.00 hrs and were all ready developed, printed, sorted and presented by 15.30 hrs, i is obvious that the firm encountered no Air Ministry inter ference in the production of *these*. And the journey hom ward was whiled away with discussions of machines an rumours of machines for the 1926 Schneider Trophy Contest

G. D

THE NEW WEAPON.

A Service correspondent writes, despite King's Regulations :—

"This I found in to-day's *Sunday Times* and is, I think, worthy of attention :—

SIR J. COOK, AIRMAN.

"Sir J. Cook, the High Commissioner for Australia, yesterday had his first air trip, making a flight on an amphibian flying-boat, which was launched at the Royal Submarine Aviation Works, Southampton, where five other boats of this class are to be constructed for the Australian Air Service to carry out a survey of the Great Barrier Reef along the East coast of Australia, for which the Dominion Government has allocated £250,000.

"Sir John and Lady Cook were supported by the Agents-General for the Australian States at the launching of the machine, a Supermarine, Napier, Seagull."

"Advance Australia!! Doesn't it occur to you that this is, possibly, a grave breach of the Official Secrets Acts thus to publish an account of a Submarine Amphibian? Not just a plain marine Amphibian, but a super marine Amphibian; and a submarine one at that.

"Now, what exactly do you suppose this Royal Submarine Aviation Works actually is? Is it perchance another ramification of the Secrets branch of the Air Ministry? Perhaps, perchance, maybe.

"Nevertheless, an Amphibian that can, by means of premeditated aforethought on the part of the pilot, do a drop of quiet submarining, is distinctly an innovation. Think of the enormous possibilities of such a craft. The revolutionising of warfare will be complete on the publication of an A.M.W.O. Creating The Underwater Air Arm, R.A.F., equipped with these Supermarine Submarine Amphibians. When, 'Far-called, our Navies melt away,' then, like Australia, 'We shall be there.'

"Forgive this outburst, but the paragraph in question gave me a lot of amusement, also forgive this use of the typewriter. I usually reserve it for communications to those to whom I owe money, in a vain hope that a typewritten missive will impress them with an altogether unjustifiable sense of my importance Also it is used for writing those abject, but necessary, letters, which start off with one having the honour to submit some trivial explanation, and finish with one still having the somewhat dubious honour of being their obedient servant."

THE BRENNAN HELICOPTER.

The Daily Mail of Feb. 5 says :—

The Air Ministry has decided that work shall stop on the Brennan helicopter, the man-lifting machine designed to rise and descend vertically by means of revolving, engine-driven vanes or screws, and also to move through the air in horizontal flight.

The decision is dictated partly by economy and partly by the recent success of the Auto-giro flying machine invented by the Spanish engineer, Senor Juan de la Cierva.

It is understood that the cost to date of the Brennan research which has yielded data of fundamental importance, has been nearly £50,000.

In reply to a newspaper correspondent Mr. Brennan has denied any knowledge of such a decision.

One is under the impression that the cost to date of the Brennan helicopter is nearer three times the amount stated. And, in any case, the rumoured decision of the Air Ministry appears to be entirely praiseworthy.

WANTED : A TRAINED SURVEYOR.

There is a vacancy with a good firm in the Argentine for an aerial surveyor of experience. Preference will be given to a former pilot or observer of the R.A.F., and, failing such, to a man with air experience of some sort. But the first desideratum is that the applicant should be a fully-trained surveyor who has done railway, forestry or regular map-making surveys and is accustomed to the use of all instruments and mathematics used in land surveying. Applicants are invited to communicate with the Editor of The Aeroplane.



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METAL FLYING-BOATS
IN
GREAT BRITAIN.

THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

Flying during the week has again been very limited on account of the weather. To the previous troubles of wind and fog we have had to contend with the flooded state of the Aerodrome. In spite of all these drawbacks our one machine managed to put in 13 hrs. 10 mins.

The following members had flying instruction:—R. C. Brighten, S. C. Richards, D. S. Brough, C. E. Murrell, W. Hay, V. H. Doree, E. A. Cook, C. H. Gould, J. S. M. Michie, Mrs. Atkey, D. P. H. Esler, P. O. Bradshaw, R. P. Cooper, E. D. Moss, T. C. Angus, Sir John Rhodes, N. Jones, A. Lees.

The following members made solo flights:—Mrs. Eliott-Lynn, Sq Ldr. M. E. A. Wright, P. G. Lucas.

Negotiations are practically completed for replacing G-EBLU with another D.H. Moth. It is hoped to take over the new machine during the week.

The Lancashire Aero Club.

Flying took place on Friday and Saturday. Owing to Mr. Scholes' absence on "the flight towards Manchester," Mr. Cantrill gave all the instruction.

Tests occupied 30 mins. Dual instruction 2 hrs. 20 mins. Solos 55 mins. Total 3 hrs. 45 mins.

The following had instruction:—C. Agar (35 mins.), B. Smith (30 mins.), M. Lacayo (5 mins.), A. Goodyear (15 mins.), W. Colley (20 mins.), S. E. Rodman (10 mins.), P. Michelson (25 mins.).

Solo flights were made by M. Lacayo (30 mins.), A. Goodyear (25 mins.).

The following account of the "Flight towards Manchester" of the Club's new Moth manned by Mr. J. Scholes and Mr. Mark Lacayo seems to have been influenced by those from a well known Pilot appearing in a Daily Paper:—

We left Stag Lane on Wednesday morning, parting regretfully from the good friends who waved us farewell. Our De Havilland aeroplane with its Cirrus engine and its special Palmer tyres flew perfectly For some moments we followed the London, Midland and Scottish Railway line; this is the old London North-Western, which winds from London to the North and is famous as "The Best Way." At Watford we wheeled high above the town where the inhabitants watched us with breathless interest, and having turned, found ourselves back at Stag Lane.

We therefore postponed the journey until Thursday, when having filled up with "Shell" petrol, "Castrol" oil (both of which may be obtained at any Garage) we once more set out guided by our reliable "Smith" Instruments. Over Rugby we came low so that Lacayo might see the great Brick Yard built by James Shufflebottom, who was very nearly elected a member of the local council in 1897. Our journey then continued uneventful until we reached the outskirts of Stafford, where we landed in a field and tried to find someone to entertain us for the night.

On Friday it seemed such a pity to leave and as our host was giving a dance in the evening, I was forced to send a telegram—"Delayed, thick fog, send ten pounds." It was during our stay here that I found the natives had named Lacayo "Tha' great silly 'ool" and myself "Th' big soft 'un."

The rest of the journey has not been described. But the machine with crew arrived at Woodford on Feb. 6, where it was welcomed by a cheering, cheery, and cheered crowd.

So now the Lancashire Club is several machines up on any of the other Clubs. When it gets the Motor Trade and Brewing Trade machines (as promised at the Inaugural Lunch) it will be able to set to work in earnest.

The Newcastle-upon-Tyne Aero Club.

The week ending Feb. 7 was one of the worst as regards weather that has been experienced since the Club commenced operations, with rain and fog almost continuously. No flying at all was possible on the Monday, Tuesday or Saturday, and the total time flown was only 11 hrs. 55 mins.

The following had dual instruction with Major Packman:—Mr. T. R. MacMillan (6 hrs. 15 mins.), Mr. H. Ellis (15 mins.), Mr. C. Thompson (35 mins.), Mr. J. D. Irving (45 mins.), Mr. W. Todd (30 mins.), Mr. G. H. Twine (30 mins.).

Mr. R. N. Thompson made one flight of 35 mins. on Wednesday, with Mr. Hetherington as passenger and another of 45 mins. with Major Packman as passenger on Sunday.

Major Packman took Mr. Ebermall for a 15 mins.' joy-ride on Sunday.

The following notes are extracted from the Club's Third Monthly Circular:—

Although one machine was off service from the 6th, the amount of flying carried out during January was even better than for December in spite of the worst possible weather conditions, chiefly wind and fog.

Flying was as follows:—Dual training, 73 flights, 39 hrs. 39 mins.; Solo training, 14 flights, 9 hrs. 10 mins.; "A" Pilots, 25 flights, 14 hrs. 3 mins.; Test and Passenger flights, 35 flights, 6 hrs. 27 min.

Totals, 147 flights, 69 hrs. 29 mins.

Mr. R. N. Thompson and Mr. W. T. Walton qualified for their licences early in the month, bringing the total qualified Pilots up to 6.

The Lecture delivered by Major F. M. Green was very much appreciated by the members.

Visit to Armstrong College.—Members are invited by Commander C. J. Hawkes, R.N., Professor of Engineering of Armstrong College and Vice-President of the Club, to visit the Engineering Section of the College on Wednesday, Feb. 24, at 7.15 p.m. Those who wish to be present should advise the Secretary not later than the 20th inst.

The next Club Whist Drive will take place on Mar. 3 at the Clubhouse, 7.0 p.m.

SIR CHARLES WAKEFIELD'S GIFT.

On Feb. 2 Sir Charles Wakefield, President of the Lancashire Aero Club, formally presented to the Club a new De Havilland Moth (27-60 h.p. A.D.C. Cirrus engine).

The presentation, which was the fulfilment of a promise made by Sir Charles at a luncheon at the Midland Hotel, Manchester, on Nov. 5 last, was made at the Stag Lane Aerodrome of the De Havilland Aircraft Co. Ltd.

Among those present were Col. Edwards, of the Civil Aviation Branch of the Air Ministry, Mr. John Leeming, Chairman of the Committee of the Lancashire Aero Club, Lt.-Cdr. Harold Perrin, Secretary of the Royal Aero Club, Capt. De Havilland, Col. Darby, of A.D.C. Aircraft Ltd., Mr. John Lord, of A. V. Roe and Co. Ltd., Major Halford, designer of the A.D.C. Cirrus engine, etc.

Making the presentation, Sir Charles Wakefield said it was many years since he first became interested in flying. The light aeroplane clubs represented a most useful movement and that he was proud to be associated with the Lancashire Aero Club. He trusted that the machine which, with great pleasure he was presenting to the Club, would help to bring honour, renown and fortune to the Lancashire Aero Club.

Col. Edwards, speaking on behalf of the Air Ministry, said he regarded this as an epoch-making event. He believed the Light Aeroplane Clubs would be great factors in the Empire. Not enough pilots could be trained in five clubs with only two Moths each. The Air Ministry had hoped that patriotic individuals would present more Moths. Sir Charles Wakefield was setting a noble example and it was sincerely hoped that others would follow his excellent example.

Mr. Leeming accepted the Moth on behalf of the Lancashire Club and heartily thanked the donor for his generous gift. He said he had always heard Sir Charles Wakefield referred to as "the patron saint of aviation." The two Moths they already possessed would be in constant demand for dual flights. Members who were able to fly solo would have good cause to thank Sir Charles Wakefield for his splendid gift which would enable them to get into the air whereas normally they would be compelled to take their turn for a chance to fly.



The presentation of a De Havilland Moth (27-60 h.p. Cirrus engine) to the Lancashire Aero Club by its President, Sir Charles Wakefield. Sir Charles Wakefield is the centre figure, with Lieut.-Col. Edwards, representing the Air Ministry, on his right, and Mr. John Leeming, Chairman of the Lancashire Aero Club, on his left

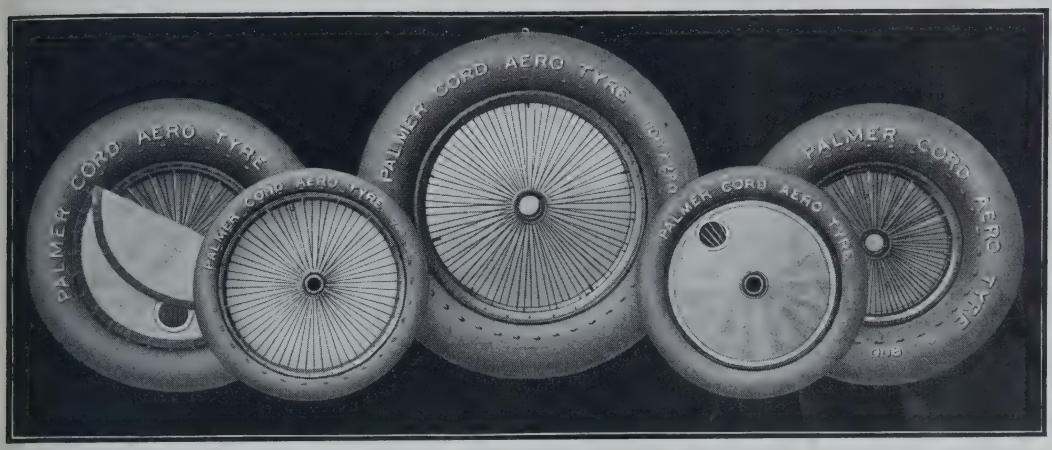
Mr. Hubert Broad gave a brilliant demonstration on a Moth before the presentation, taking full advantage of the Aerobatics Certificate of Airworthiness recently granted to the D.H. type 60. He also flew the D.H.9 fitted with the 385 h.p. Jaguar engine which is now used by the R.A.F. Reserve School.

Another machine present on the occasion was a D.H.9 fitted with the new A.D.C. 340 h.p. Nimbus engine. This engine is a new development of A.D.C. Aircraft Ltd. on the lines of the faithful Puma. It is said to weigh some 25 lbs. less and give 100 h.p. more than the Puma.—L. B.

[Now the Lancashire Club is looking forward to receiving the three other machines promised by Sir William Letts and by the Manchester Motor Merchants and the Brewers.—C. G. G.]

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	179	178.	55.	132/46	1000×180	148	220.	80.	Central
300×60	16	111.12	25.4	Central	650×125	119	178.	55.	132/46	,,	149	185.	55.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	155	220.	66.67	Central
,,	172	130.	38.09	Central	,,	188	120.	34.92	Central	,,	166	185.	55.	125/60
575×60	21	160.	28.	Central	750×125	77	178.	44.45	132/46	900×200	107	185.	55.	Central
,,	186	120.	34.92	Central	,,	92	185.	55.	135/50	,,	108	185.	55.	125/60
,,	190	150.	38.09	Central	,,	95	185.	55.	Central	,,	128	220.	66.67	Central
650×65	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	,,	137	250.	80.	Central
,,	79	178.	44.45	Central	,,	112	150.	38.09	Central	,,	157	185.	80.	Central
,,	100	178.	38.09	132/46	,,	176	178.	44.45	Central	,,	202	185.	60.32	Central
,,	101	178.	31.75	132 46	,,	179	178.	55.	132/46					
600×75	21	160.	28.	Central	800×150	161*	185.	55.	135/50	1100×220	134	220.	66.67	Central
,,	186	120.	34.92	Central	,,	162*	185.	55.	Central	,,	136	250.	80.	Central
,,	190	150.	38.09	Central	,,	163*	185.	66.67	135/50					
700×75	78	178.	44.45	132 46	,,	169†	185.	55.	135/50	975×225	192	185.	60.32	Central
,,	79	178.	44.45	Central	,,	177	185.	55.	135/50					
,,	100	178.	38 09	132 46	,,	183	185.	55.	Central	1250×250	133	250.	80.	Central
,,	101	178.	31.75	132/46	,,	211*	185.	60.32	135/50	,,	154	304.8	101.6	Central
700×100	77	178.	44.45	132 46	1000×150	167	185.	55.	125/60					
,,	92	185.	55.	135 50	,,	174	250.	80.	Central	1500×300	115	304.8	101.6	Central
,,	95	185.	55.	Central	,,	182	185.	55.	Central	,,	126	304.8	152.4	Central
,,	99	178.	38.89	132 46	,,	187	220.	66.67	Central					
,,	112	150.	38 09	Central	,,	201	185.	60.32	125 60	1750×300	139	400.	152.4	Central
,,	176	178.	44.45	Central	,,	210	185.	60.32	Central	,,	191	350.	150.3	Central

Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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UND (343)

THE AMENDMENT OF THE REGULATIONS FOR PRIVATE FLYING.

For some time there has been a considerable amount of agitation about the way in which private flying is affected by Air Ministry regulations. Some people hold that private flying is cramped and hampered by the regulations. Others, among whom one counts oneself, hold that the regulations have had an entirely salutary effect, in that they have prevented incompetent people from killing themselves and others and thus giving the public the idea that flying is more dangerous than it is when properly regulated.

However, as a result of this agitation the Air Ministry is considering a modification of the regulations. The Royal Aero Club has appointed a Committee to study the conditions and regulations governing private flying and to consider whether any, and if so what, changes should be made to encourage private flying.

An Air Ministry Memorandum on the subject has been circulated to the various Light Aeroplane Clubs, to private owners of aircraft, to manufacturers and to various other people whose opinions are considered to be worth having.

The proposed amendments deal with the following subjects: (a) The issue and renewal of licences; (b) Flying within the United Kingdom and Ireland; (c) Examination of machines before flying; (d) The investigation of accidents.

The Air Ministry memorandum strikes one as being exceedingly reasonable in tone, and incidentally it removes a considerable amount of misunderstanding as to the interpretation of the existing regulations. Personally one is of the opinion that the proposed amendments are likely to give quite as much liberty as any reasonable aviator can desire.

It is only rational that before he is permitted to fly a pilot should be certified by his own medical attendant as reasonably fit, and that he should give some proof to competent judges of his ability to handle an aeroplane. And it is also reasonable to demand that an aeroplane should be judged fit to fly after it has been rebuilt or overhauled before it is allowed to proceed further across country, where it may endanger other people. Furthermore it is reasonable to insist that the owner of a private aeroplane shall be compelled by law to insure against third party risks.

The Air Ministry's suggested amendments are as follows:—
665634/26.

AIR MINISTRY MEMORANDUM.

PROPOSED AMENDMENT OF REGULATIONS GOVERNING PRIVATE FLYING.

1. The Air Ministry have had under consideration as a result of various representations, the application of the Air Navigation Orders and Directions to private aircraft, i.e., aircraft not carrying passengers or goods for hire or reward.

2. This consideration has had in view more particularly the possibilities of relaxing, in the interests of owners of private aircraft, the regulations with regard to the Certificate of Airworthiness of the aircraft, the Pilot's Licence and the investigation into aircraft accidents.

3. *Certificate of Airworthiness.*—By Article 11 of the Convention for the Regulation of Aerial Navigation (Paris, Oct. 13, 1919):

"Every aircraft engaged in international navigation shall, in accordance with the conditions laid down in Annex B, be provided with a Certificate of Airworthiness issued or rendered valid by the State whose nationality it possesses."

and the International Commission for Air Navigation, set up by the Convention, has been studying the international minimum standard conditions which an aircraft must satisfy before a Certificate of Airworthiness can be issued.

It will be noted that under the Convention the obligation with regard to Certificates of Airworthiness only affects aircraft engaged in international navigation, but with the authority of Section 2 of the Air Navigation Act, 1920, the policy of the Air Ministry has been to forbid the flight of all aircraft not possessing a Certificate of Airworthiness, except (a) in the case of aircraft flown within three miles of an aerodrome for the purpose of experiment or test only, or (b) by special permission of the Secretary of State in writing, and the Air Navigation Orders have been drawn up accordingly.

It is possible to alter this policy by an amendment of the Air Navigation Orders and without any alteration of the Act so that the regulation applies only to aircraft carrying passengers or goods for hire or reward or engaged in international navigation, and so that private aircraft flown in this country are exempted from the requirement to have a Certificate of Airworthiness.

An amendment of the Order in this sense is under consideration by the Air Ministry.

In connection with any discussion on the subject the advantages gained in the direction of encouraging an increase in private flying by this removal of administrative restrictions should be balanced against the possible effect that such a change might have both on the reputation for safety enjoyed by British aircraft at home and abroad as a result of the high standards demanded before a Certificate of Airworthiness is granted and also on the insurance rates. Moreover, attention should be called to the possible increase in third party risks, and in this connection Section 9 (1) of the Air Navigation Act should not be forgotten, by which proof of negligence is not required in the case of material damage or loss caused by an aircraft when in flight or on landing or taking off.

4. *Examination before Flight.*—As there is some misunderstanding on the subject it may be worth while placing on record here that aircraft not carrying passengers or goods for hire or reward are not required by the Air Navigation Orders to be examined before flight by a certified Ground Engineer.

As the Directions stand at present, however, the regulation requires that when an aircraft is overhauled or repaired, or when any part of it has been replaced, it shall be examined and certified by a Ground Engineer before it flies again.

The Air Ministry have under consideration the abolition of this regulation in so far as private aircraft are concerned.

5. *Private Pilot's Licence.*—Under Article 12 of the International Air Convention:—

"The Commanding Officer, pilots, engineers and other members of the operating crew of every aircraft shall, in accordance with the conditions laid down in Annex E, be provided with certificates of competency and licences issued or rendered valid by the State whose nationality the aircraft possesses."

It will be noted that whereas under the International Air Convention certificates of airworthiness are only required for aircraft engaged in international navigation, all pilots and members of the operating crews, whether the aircraft on which they are employed are engaged in international navigation or not, must be provided with certificates of competency and licences.

The minimum qualifications necessary for obtaining a Private Pilot's Licence are set out in detail in Annex E of the International Air Convention and are reproduced in the Air Navigation Regulations. These qualifications, as they are contained in an Annexe to the Convention and not in the Articles of the Convention itself, can be amended from time to time by the International Commission. In this connection, on representations made by the Light Aeroplane Clubs, the British Delegation to the Commission are proposing that the altitude test which requires at present that "the pilot shall remain for at least an hour at a minimum altitude of 2,000 metres above the point of departure" shall be amended so as to read "the pilot shall attain a minimum altitude of 2,00 metres above the point of departure." This proposal will be discussed at the next meeting of the Commission to be held in Paris in April, and if adopted the Air Navigation Directions will be amended accordingly. Apart from this the Air Ministry are not proposing any amendments with regard to the conditions for the issue or renewal of a Private Pilot's Licence.

It must be remembered that incompetency on the part of a Pilot or ignorance of the rules of the air is a source of danger to other Pilots and aircraft.

With regard to the Medical Examination required in the case of Private Pilots the minimum standards are laid down in Annex E of the Convention, but each contracting State is at liberty to fix its own methods of examination and to raise the conditions if it so desires. The international standard which is the one adopted in this country is not unduly high, and in accordance with the Air Navigation Directions (A.N.D.3.D.) the medical examination for the issue and for the renewal of the Private Pilot's licence can be conducted by the applicant's usual medical attendant, who submits his report to the Air Ministry.

The Air Ministry do not at present contemplate any alteration in the arrangements for the medical examination of applicants for Private Pilot's licences.

6. *Investigation of Accidents.*—Under the Air Navigation (Investigation of Accidents) Regulations, 1922, notification of accidents is required in the case of death or personal injury to any person, whether carried in the aircraft or not, and in the case of serious structural damage to the aircraft.

On notification of the accident being received the decision as to whether a preliminary investigation into the cause of the accident is necessary or not must rest with the Inspector of Accidents, but if he is satisfied that an investigation is unnecessary, the owner of the aircraft will receive permission at once, in accordance with the present practice, to remove the aircraft.

MILITARY AVIATION IN MOROCCO.

The following report extracted from *The Times* gives some very interesting information concerning the activities of a unit of the French *Aeronautique Militaire* in the recent campaign against the Riffi.

The record of the 37th Aviation Regiment, which was recently mentioned in dispatches by General Naulin for its valuable work during the Moroccan campaign, gives an idea of the part played by aircraft during the operations.

Six squadrons [*escadrilles*] were employed on the Rif front, and one in the region south of Taza, where its task consisted in keeping hesitating tribes in a proper state of awe. These squadrons were supported by those stationed in Southern Morocco, which lent nearly all their machines. The work on the Rif front included much transport of supplies and wounded besides the normal military functions of reconnaissance, bombardment, and photography.

From July 1, 1925, to January 15, 1926, the regiment counted 12,000 hours of flight, involving 5,500 service missions. These included more than 3,000 bombardments, in the course of which 375 tons of bombs were dropped. In the course of 260 photographic missions 1,400 photographs were taken, and finally 500 wounded were transported.

The 37th Aviation Regiment is a reconnaissance unit to which presumably bombing *escadrilles* have been attached. The number of *escadrilles* (the tactical unit) in a regiment is variable. The strength of a reconnaissance *escadrille* is eight aeroplanes and of a bombing *escadrille* ten aeroplanes.

If it were possible to learn the number of casualties caused to the Riffi by this vast air effort the information would be of greater value. Rumour has it that the total casualties, dead *and* wounded, amount to less than 200.

A SOUTH AFRICAN SPRAYING EXPERIMENT.

At the instigation of the Division of Entomology and Forestry of the South African Government, the South African Air Force are carrying out experiments in spraying trees and crops for the extermination of pests.

The first test was carried out over a gum plantation infested with the eucalyptus snout beetle, on a farm near Klipfontein. This was successfully sprayed with calcium arsenate powder from a specially fitted aeroplane.

The test was closely watched by experts from the Division of Entomology and Forestry as well as by Air Force officers from Roberts Heights, Pretoria.

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MODERN AMERICAN ENGINE DEVELOPMENT.

The paper by Mr. Chas. L. Lawrance, President of the Wright Aeronautical Corporation, on Modern American Aircraft Engine Development, which was read before a combined meeting of the Royal Aeronautical Society and the Institution of Automobile Engineers, on Thursday, Feb. 4, proved to be of great interest.

It appears that the American Air Services' Secrecy Departments are in a very rudimentary stage of development—if indeed they exist—a fact which places the American lecturer on aeronautics in a position of very considerably greater freedom than is possible to his fellow from this country. In addition to this the American manufacturer notoriously does not attach much importance to "trade secrets" of a technical nature, but regards public advertisement of his latest work as of greater value than any advantage which he might gain over his rivals by an attempt at concealment.

Thus Mr. Lawrance, who is primarily concerned with the development of one particular make and type of air-cooled engine, did not devote any notably large part of his lecture to that particular type or make, but gave equally full attention to the merits—and the ingenuity displayed in the design—of both water and air-cooled types produced by competitors of his own firm.

As an example, the paper gives data as to the dimensions, and polar section modulus of the crankshafts, and of the crankshaft bearing loadings on the Liberty and the Packard 1500 and 2500, Curtiss D.12 and V.1400, and Wright Tornado engines. At least three of these engines—were they British—would still be unnamable in this country, and the lecturer who proposed to publish such data concerning them—if he could obtain it—might confidently expect a long sojourn in the "town calabooze" as the reward of his temerity.

As a result of the intelligent attitude adopted on such matters in America, Mr. Lawrance is able to come to this country and to read an extremely interesting paper which constitutes a thoroughly well-deserved advertisement of the work of American aero-engine designers. But no British lecturer has it in his power to put the work of our own designers—which equally well deserves advertisement of this type—in anything like the same light before a British audience.

Dealing with water-cooled engines first, the six engines above named covered all those in general use, or shortly to be put into production. These engines range from 420 h.p. for the Liberty up to 800 h.p. for the Packard 2500 and except for the Liberty are all of the 12-cylinder 60° Vee type. The Liberty was the heaviest of these at 2.69 lbs. per h.p., including water and radiators (2.09 lbs/h.p.), and the two Packards and the Curtiss V.1400 the lightest at 2.04 lbs. (with cooling) (1.44 lbs. dry) for the Packards, 1.92 lbs. (with cooling) (1.32 lbs. dry) for the Curtiss. These engines were notable not only for their low weight, but for the compactness of their design.

The cylinder design of the Packard engines, due to Mr. L. M. Woolston, was particularly interesting. The steel head had four annular protuberances surrounding the valve seats. To these a steel plate is welded, carrying the valve ports and cam gear. This gives a very rigid valve seat. The valves are arranged so that there is a common exhaust port for each pair of cylinders, and common inlet ports for cylinders 2-3 and 4-5. This arrangement allows very close setting of cylinders—the distance between adjacent cylinder bores being only $\frac{5}{8}$ inch.

The arrangement is criticised, as the exhaust from the valves deepest in the ports pass the stems and guides of the outer valves. That serious cooling problems are encountered is shown by the adoption of oil-cooled exhaust valves. Oil from the camshaft bearings passes through the camshaft, into the base of the cam-follower guides, through the tappets into the valve stem. A tube is inserted in the valve stem to carry the oil down to the head, and the oil returns outside this tube to emerge through holes in the stem above the guide. This system is said to be quite effective and a number of engines using it have performed very satisfactorily. Mr. Lawrance mentions that recently a Packard 1500 had completed a 50-hour test developing 605 h.p. for the whole period at 2,500 r.p.m. (At this power the dry weight per h.p. is 1.22 lbs.) The normal rating is 510 h.p. at 2,100 r.p.m.

The Curtiss V.1400—the lightest of American water-cooled types—used an entirely different type of cylinder construction. This type originated in England, but did not seem to be properly appreciated in Europe. It consisted of a steel sleeve threaded into an aluminium head. It did not allow such close cylinder spacing as the Packard arrangement, but it was more orthodox and was, he believed, less liable to gas or water leakage and to valve trouble.

The V.1400 was rated at 500 h.p. and 2,100 r.p.m. for a dry weight of 660 lbs. With high compression and appropriate fuel, as used in the Pulitzer and Schneider races, it gave 620 h.p. at a weight of 1.06 lbs. per h.p.

The Wright Tornado (T.3) used a somewhat similar cylinder construction, but the cylinder barrel was not in contact with the water. In a later model this had been altered, with a considerable saving in weight. The cylinder head was roof-shaped—an arrangement which produced a rigid head, but required special machining equipment.

With their close cylinder spacing all these engines ran with very high bearing loads, which were only possible in virtue of the rigidity of crankshaft, crankcases and bearing cups. The rubbing factor of the centre bearing of the Liberty was considered high when that engine was produced—and was actually as high as that bearing would stand. On some more recent engines the loading was over 50% higher, and there was no apparent reason why it should not still further increase. Camshafts of these engines were of large diameter, much stiffer than that of the Liberty, the crankcases were very heavily ribbed at bearings, bearing caps of duralumin of massive construction were employed, and the bearings were steel backed.

So long as the bearings could be kept cool by oil or other means and distortion avoided it was hard to predict how much further bearing loads could be increased. Given rigidity, the practical limit seemed to be the amount of oil that could be circulated without excessive oil consumption. The engines in question used oil pressures of 100 to 160 lbs./sq. in. and consumed less than .03 lbs. per h.p.

Both articulated and forked typed rods were used, but until the steel-backed type as used on the Rolls-Royce was adopted the advantage was with the articulated type. Without this type of bearing it was impossible to secure the necessary big-end rigidity in large engines with forked rods. General practice in the U.S. favoured the articulated type.

Piston design seemed to have become stabilised. All manufacturers used some form of ribbed piston and all except Curtiss had adopted a development of the original Hispano Suiza type with ribs parallel to and at right angles to the piston pin.

The Curtiss piston used radial ribs and a circular central rib.

The Packard piston was of the slipper type, with a heavy and nearly ribless crown. It was very short—the 1,500 piston ($5\frac{5}{8}$ diam.) being only 2 in. long below rings.

At the other extreme was the piston of the air-cooled Liberty. In this it was desired to keep as much of the engine unchanged as possible, and this led to placing the piston pin at the bottom of the piston. This piston has a very large bearing surface and the success of the engine is attributed largely to this piston which runs cooler and remains in better condition than any aircraft piston—air or water-cooled—known to the author. The most used material for pistons in the U.S. is the N.P.L.'s "Y" alloy.

Several American engines are being built to run inverted. The first engine so treated was the Liberty and this proved very satisfactory, giving increased accessibility and a better vision for the pilot. The air-cooled Liberty has also been arranged to run inverted.

One of the details in regard to which the U.S. had been most backward was the use of reduction gearing. Until recently all engines had been built for direct drive, despite the fact that a very satisfactory gear with spring drive had been developed by the Alison Engineering Co. Now, however, all new projects for aircraft engines, except those used for pursuit or training machines, provide for the installation of reduction gears, and practically every type of such gear was being studied or developed.

Of air-cooled engines, the Wright Whirlwind, a nine-cylinder 200 h.p. unit, was the only one in quantity production in the U.S. Several large models were in process of development and these would be produced in quantity in due course. About 600 Whirlwinds had been built and they were being used very generally for commercial purposes. The popularity of this engine and its availability for commercial uses was due to the far-sighted policy of the Bureau of Aeronautics of the U.S. Navy. Realising the ultimate possibilities of the type they decided to make air-cooled engines standard for all power plants up to 300 h.p., despite the excellent qualities of the Hispano-Suiza type which had formerly been used.

The use of a large number of these engines under service conditions had made it possible to eliminate all the weak points, and to-day the engine was one of the most reliable power plants known to the author.

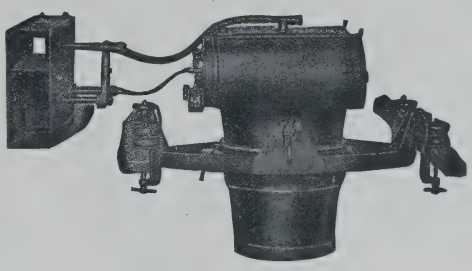
The cylinders were aluminium, shrunk and threaded to a steel sleeve. This was less costly than forming fins in the steel barrel, and the difference in cooling was negligible. For larger engines it was heavier than the finned steel barrel, and with this arrangement the shortness of the aluminium head helped in machining the valve seatings at an angle to the axis.

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The magnetos were in front of the engine—a somewhat unusual position which had advantages, particularly on small engines. On larger engines where the fixing bolt circle was of greater diameter and the magnetos could be put behind the engine plate, the advantage was less. With proper cowling design these magnetos could be adequately protected without spoiling the clean design of the nose.

The master and link rods were of very sturdy design and the heavy section of the big-end gave excellent bearing conditions. The limit of bearing loads and rubbing velocities had not nearly been reached. At the end of 50 hours' run at full power and 2,000 r.p.m. the big-end bearing showed little signs of wear and a 50-hour run at 2,200 r.p.m. is shortly to be attempted.

The induction system consists of three passages side by side, each serving three cylinders. These are connected by manifold to a double carburettor with one float chamber between the two chokes. A somewhat higher M.E.P. can be obtained with three separate carburettors, but the difficulty of keeping three carburettors in adjustment led them to think it worth while to design a triple Venturi carburettor. A low-powered engine of sturdy construction like this was naturally somewhat heavy—but it still compared well at 2.34 lbs. per h.p.—with water-cooled engines of the same output.

Much of the development of the air-cooled radial was due to the work of Messrs. Heron and Jones, some of whose work he proceeded to mention. The least satisfactory feature of the air-cooled engine had been the exhaust valve. In a single cylinder developing 48 h.p. this valve would not last more than 25 hours. The valve ran red at the junction of stem and neck and finally failed there. The guides also wore out quickly. A hard tungsten steel valve, hollow and partly filled with a mixture of sodium and potassium nitrates, running in a hard tungsten steel guide, gave greatly improved cooling and a greatly reduced hot zone. After 100 hours at full power the last 50 hours under conditions of violent auto-ignition scaling occurred on the neck, but little on the stem. The use of a roller on the tappet eliminated the guide wear.

An air-cooled cast-iron cylinder of 4⅛ in. bore had been run at 140 lbs. B.M.E.P. (27.8 b.p.h.) at 1,800 r.p.m. At a point on the exhaust valve seat a temperature as high as 750° F. was reached, but the salt-cooled valve was only perceptibly red for about ⅝ in. in the middle of the neck. The fins were afterwards removed and the cylinder water-jacketed. No change in performance occurred, but the valve ran a little cooler, the red patch disappearing.

One of the most interesting developments of recent years was the air-cooled Liberty, developed by Messrs. Heron and Jones.

It was a very satisfactory power plant, giving 420 h.p. at 1,800 r.p.m., and although heavier than a new design need have been, it was still 200 lbs. lighter than the original Liberty with water and radiator. As there are some 10,000 unused Liberties in stock, and their water-jackets are becoming corroded and unreliable, the air-cooled conversion may be of very great value.

To give space between cylinder for air-cooling it was necessary to reduce the bore from 5 in. to 4⅜ in., and the power is maintained by increased m.e.p. and slightly increased r.p.m. which is possibly thanks to the lighter reciprocating parts used. An air scoop which can easily be shuttered is used for cooling and it has not been found necessary to use baffles or deflections to distribute the air.

The air-cooled Liberty has a built-in gear-driven low altitude supercharger which adds practically nothing to the weight of the engine. A similar device fitted to a Curtiss D.12 added 5 lbs. only. As at present used it amounts to little more than a rotary induction system like that of the Armstrong-Siddeley engines, and from the point of view of distribution alone is a useful device. It is believed that it will be possible to supercharge up to 10,000 ft. with this device, but so far it has only been tested under conditions giving two to three inches of mercury in the manifold.

The general problem of supercharging had received a great deal of attention. The turbine-driven type had been developed by the Engineering Division and the General Electric Co. and the Roots blower type has been studied by the Bureau of Aeronautics and the National Advisory Committee. The G.E.C. supercharger was now a highly reliable and satisfactory piece of equipment. It was designed for engines of 400-500 h.p. and was rated to give full power at 20,000 ft. By over-speeding it could maintain sea level pressure at 30,000 ft. It followed the lines established by Rateau, but in arrangement and detail was entirely different. It was fitted at the side of the engine with the turbine outwards to facilitate cooling. It was definitely past the experimental stage and is now considered standard service equipment.

Experiments with the geared centrifugal supercharger have been mainly devoted to the driving train. No thoroughly reliable and satisfactory design has been developed, but promising results have been obtained. The Roots blower type is giving very satisfactory results and promises to compete with the turbo type for high altitudes.

One light plane engine—the Wright Morehouse—is being produced in America. This is of the two-cylinder opposed type of 80 cubic inches displacement and has been designed rather for low cost than for high performance, using cast-iron cylinders and a rather flat head. It has, however, a creditable performance.

Three large air-cooled radials are now being developed. These are the Wright Simoon (1,200 cub. in.) of 350 h.p., the Curtiss R.1454 of 400 h.p., and the Wright Cyclone (1,65 cub. in.) of 425 h.p. All these are of the nine-cylinder type. The Simoon recently completed a 50-hour full power test, the Curtiss radial is undergoing acceptance tests at McCook Field and is almost ready for production, and the Wright Cyclone is under acceptance test for the U.S. Navy.

All these engines have enclosed valve gear which is designed able to provide proper lubrication and to protect springs from sudden chilling by spray.

An interesting development was the double magneto. In its latest form this was a magneto with two armature windings, and with two separate breakers and independently driven distributions. Until recently there was a prejudice against any but complete dual systems on account of possible failure. Successful magneto drives depended largely on absence of crankshaft vibration, and in their modern engines at least for the speeds now used, this trouble seemed to have been eliminated. From the point of view of weight alone the dual magneto deserved intensive study and development.

Summing up, Mr. Lawrance said that for water-cooled engines they had standardised the 12-cylinder Vee type, with the closest possible cylinder spacing, very rigid construction and with a tendency to rapid increase in speed of revolution.

In the air-cooled field they were far from having reached the ultimate type, but had at least put cylinder and valve troubles behind them. They were now attacking those problems of master rod and articulated rod construction involved in the tendency towards higher speeds of revolution.

The Vee air-cooled type, now that the cylinder and valve problems are solved, can follow the general lines of water cooled technique, and in his opinion is likely to become a very popular type wherever overall length is not a deciding factor.

[*A report of the subsequent discussion will appear next week.*]

THE FLIGHT TO SOUTH AMERICA.

On Feb. 4, Commandante Franco, Capt. Ruiz de Alva, and their engineer, left Recife, Pernambuco, at 05.00 hours, and arrived at Rio de Janeiro at 20.05 hours the same day. After their arrival at Pernambuco, a certain amount of delay was caused owing to the need for repairing an airscrew.

On arrival at Rio further damage was caused. This time the hull suffered in the crush of small boats round the Dornier Wal on alighting in the harbour and repairs may delay the resumption of the flight which had been tentatively fixed for Feb. 6. Later it was reported that a start would be made early on Feb. 7.

TITANINE AGAIN.

The Titanine-Emaillite Co. Ltd. have received a message stating that Titanine was used with complete success on the Dornier-Wal on which Commandante Franco crossed the South Atlantic.

A SPORTING GESTURE.

The Directors of the H. G. Hawker Engineering Co. Ltd. have generously presented the Royal Aircraft Establishment Light Aeroplane Club with the Cygnet machine which was flown by Mr. Raynham in the 1924 Light Aeroplane Competitions.

This machine is one of the two Cygnets manufactured by the Hawker Company for the Light Aeroplane Trials in 192 and handed over to the Martlesham Experimental Station at the end of the Trials. Owing to various engine troubles the tests were delayed and eventually the machines came back to Brooklands. One of them was entered in the 192 Competitions and won the International Handicap piloted by Flt. Lt. Bulman. The other was kept in reserve for future competitions and experimental work.

Mr. Sopwith and Mr. Sigrist were so impressed with the enthusiasm of the R.A.E. Light Aeroplane Club during a visit to Farnborough that they decided to present it with the Cygnet, flown by Mr. Raynham in 1924.

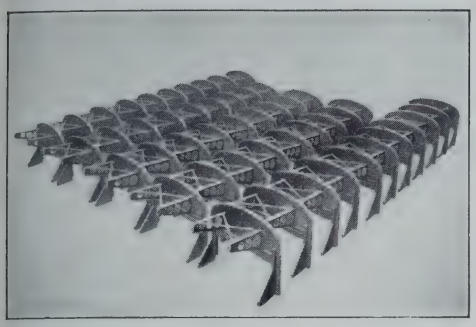
The machine has now been handed over and the Club has expressed its thanks and gratitude. The machine will probably be fitted with a Cherub engine and entered for the 192 Light Aeroplane Competitions.

THE ROYAL AERO CLUB SPECIAL RACING FUND, 192

The following amounts represent progress up to the present date :—Previously announced, £267 11s.; F. R. Simms, £2 2s.; Lieut.-Col. J. Barrett Lennard, £5 5s.; C. H. Gray, £10; G. Gilman, £2; A. J. Wallace Barr, £10 10s.; H. D. Cutler, £2 2s.; R. L. Preston, £1 1s.; Seven Aeroplane Club, £5 5s.; total, £305 16s.

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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 9; Wednesday, 0; Thursday, 13, Friday, 9; Saturday, 14; Sunday, 0.

IMPERIAL AIRWAYS LTD. :

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 35, passengers 75, freight 6 tons

AIR UNION :

Paris—London: Machines 15, passengers 36, freight 9½ tons.

K.L.M. :

Amsterdam—Rotterdam—London: Machines 7, passengers 11, freight 1 ton.

DEUTSCHER AERO LLOYD :

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British Machines, 35, carrying 75 passengers. Foreign Machines, 22, carrying 47 passengers.

Comparative Figures :

Week ending Feb. 7 :

Machines, 57; Passengers 122, Crews, 70; Total personnel, 192.

Corresponding week, 1925 :

Machines, 59, Passengers, 86; Crews, 73; Total personnel, 159.

Corresponding week, 1924 :

Machines, 69; Passengers, 103; Crews, 107; Total personnel, 210.

Corresponding week, 1923 :

Machines, 50; Passengers, 144; Crews, 87; Total personnel, 231.

Corresponding week, 1922 :

Machines, 54; Passengers, 92; Crews, 87; Total personnel, 179.

Corresponding week, 1921 :

Machines, 22; Passengers, 25; Crews, 27; Total personnel, 52.

Croydon Notes.

Excavation on the site of the new aerodrome buildings continues, as it has done for the past several months. All the work seems to be going on below the surface (as in other Air Ministry business). Nothing yet has appeared above ground except earthworks.

There is a rumour at the aerodrome that this is not really the start of the new buildings. It appears that really it is a redoubt or some sort of stronghold in which the technical and secrecy experts of the Air Ministry will take refuge when they eventually succeed in rousing the populace into a state of blind fury.

The only snag about it is that, as in other things, the technical experts will miscalculate and the redoubt will be useless and the secrecy experts will discover, as in other things, that everyone except themselves knows the secrets of it and they will be overwhelmed. And of course by continued delays the place will not be ready for their retreat, anyway.

One thing is quite obvious and that is that the builders are encountering the usual Air Ministry interference, otherwise the buildings would have been finished long ago.

The great feat of the week was the completion of its first hundred hours by the Bristol Jupiter "of the latest type." The tests started on Jan. 4, and on Feb. 4, 104 hrs. 53 minutes' flying had been done with it, in which time 11,643 miles had been covered.

There have been no replacements and the petrol consumption has been steadily 22.6 gallons per hour. Altogether it has been a fine record for the first month, and thoroughly justifies the faith which the Bristol people have in their engine.

It seems now that Imperial Airways Ltd. will be bound to fit Jupiters to the D.H.66. The engine has proved its reliability, and no other radial engine of its weight develops 450 h.p. at normal revs. and 485 h.p. at maximum revs.

By Feb. 6, 109 hrs. 4 minutes had been completed and 12,097 miles had been covered. The distance flown is almost equal to a flight half round the earth at the Equator. So far no replacements of any kind have been made in the engine.

M. Codos on a Goliath made three night flights between London and Paris during the week. This service is to carry on experimentally for some time.

A.D.C. Aircraft Ltd. have been busy. Mr. Perry has made half-a-dozen flights on the mystery D.H.9, including one to Stag Lane. He has also been making altitude tests to 16,000 ft., on a Martinsyde-A.D.C.I. Several Avro-type machines with Bristol Lucifers are going through their tests for a foreign Power.

The Cirrus is now well in production, and about 100 are under construction. From raw material to passing out the finished article takes about one month. The Cirrus first appeared less than a year ago, so that the speed at which it has been put into production must be a record.

Once again this is because, being a private venture, there has been a minimum of Air Ministry interference. Let us hope that redoubt will soon be completed.—G. D.

THE FLIGHT TOWARDS THE CAPE.

Mr. Alan Cobham and Mr. Elliott left Bulawayo for Pretoria on Feb. 3. They had to send Mr. Emmott on by train as the machine would not take off with a full load.

Considering that the D.H.50 under normal conditions functions well with a full load with 240 h.p. it seems curious that with an engine which should develop 425 h.p. it would not take off, even though Bulawayo Aerodrome is nearly 8,000 ft above sea level! It looks very much as though the troubles which were so acute at the start have not entirely deserted the expedition.

On Feb. 5 they flew from Pretoria to Johannesburg. Unfortunately Mr. Elliott was taken ill with malaria, and the flight has been delayed. Everyone will wish Mr. Elliott a speedy recovery.

CONGRATULATORY.

The flight by Major Franco from Spain to Pernambuco has produced the following congratulatory messages :

D. Napier and Son Ltd. have received a telegram from Sir Samuel Hoare, the Secretary of State for Air, which reads as follows :—

"I congratulate you on fresh success secured by Napier engine in Transatlantic flight by Spanish Army Air Service. This achievement is one more proof of the unexcelled reliability of the products of the British Aircraft Manufacturing Industry."

The following is a cablegram which D. Napier and Son Ltd. received from Major Franco, in Spanish and English :—

"Motores maravillos trabajaron muchas horas regimen mayor que normal desde Baires remitive su trabajo detallado."

"Wonderful engines worked many hours at heavier output than normal. From Buenos Aires I will send details of working."

The Air Ministry announces that Sir Samuel Hoare, Secretary of State for Air, has sent the following telegram of congratulation to the Minister of War, Madrid :—

"Air Council have learned with great pleasure of successful completion of Trans-Atlantic flight by Commandante Franco and Captain Alva. They desire to offer Spanish Army Air Service cordial congratulations on this most brilliant achievement."

The Duke of Tetuan, Spanish Minister of War, has sent a cable to Sir Samuel Hoare saying :—

"The Spanish Air Service warmly thanks you for the congratulations of so high an Authority in the World of Aviation."

PERSONAL NOTICES.

MARRIAGE.

GEORGE—WILES.—On Jan. 29, at Bombay, Sandys Parker George, R.A.F., son of the late Rev. T. P. George and Mrs. George, Oxford, to Winifred Marie, daughter of Mr. and Mrs. Wiles, Oxford.

FORTHCOMING MARRIAGES.

DAVIES—WOOLRYCH.—The engagement is announced between Leonard Gordon Davies, late R.F.C., second son of Mr. and Mrs. Herbert Davies, of Pinner View, Harrow, and Marguerite Ingeborg, younger daughter of the late H. R. Woolrych, M.A., and Mrs. Woolrych of Radcliffe Gardens, S.W.

DOWDING—WILSON.—The engagement is announced between Kenneth Townley Dowding (late R.F.C.), youngest son of Mr. A. J. C. Dowding and Mrs. Dowding, of 65, Wimbledon Hill, S.W.19, and Kathleen M. K. Wilson, youngest daughter of the late J. K. Wilson and of Mrs. Wilson, of Snaithing Brook, Sheffield.

HOLMES—SQUIRE.—The engagement is announced between John Duncan Vernon Holmes, late R.A.F., younger son of Mr. and Mrs. Holmes, of East Hanney, Berks, and Florence Routcliffe, elder daughter of Dudley E. Squire and Mrs. Squire, of Trafalgar Lawn, Barnstable, Devon.

YORK MOORE—SAMPSON-WAY.—The engagement is announced between Flt. Lt. T. P. York Moore, R.A.F., youngest son of Dr. and Mrs. York Moore, 12, The Avenue, Surbiton, and Rowena, eldest daughter of Major and Mrs. Sampson-Way, The Manor House, Henbury, Glos.

BIRTHS.

LISTER.—On Jan. 24, at The Willows, Tayport, Fife, N.B., to Doris Winifred (*née* Wilkes), the wife of Sq. Ldr. T. V. Lister—a son.

LOW.—On Feb. 3, at Pietermaritzburg, Natal, the wife of Philip V. C. Low, late the Black Watch and R.A.F.—a son.

WARREN.—On Jan. 31, at Port Elizabeth, to Doris, wife of Leslie Reginald Warren, D.F.C. (late Capt., R.A.F.)—a daughter.

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Edited by C. Grey

Vol. XXX. No. 7. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"THIS WE LEARNED FROM FAMOUS MEN."



USING THEIR FEET.—The Navy forwards breaking away in the Rugger Match at Twickenham on Feb. 13, in which the R.N. beat the R.A.F. by 8 points to 3. The proper use of the feet in the loose has still to be learned by the R.A.F., in spite of all the famous teams of the past which might have served as teachers.



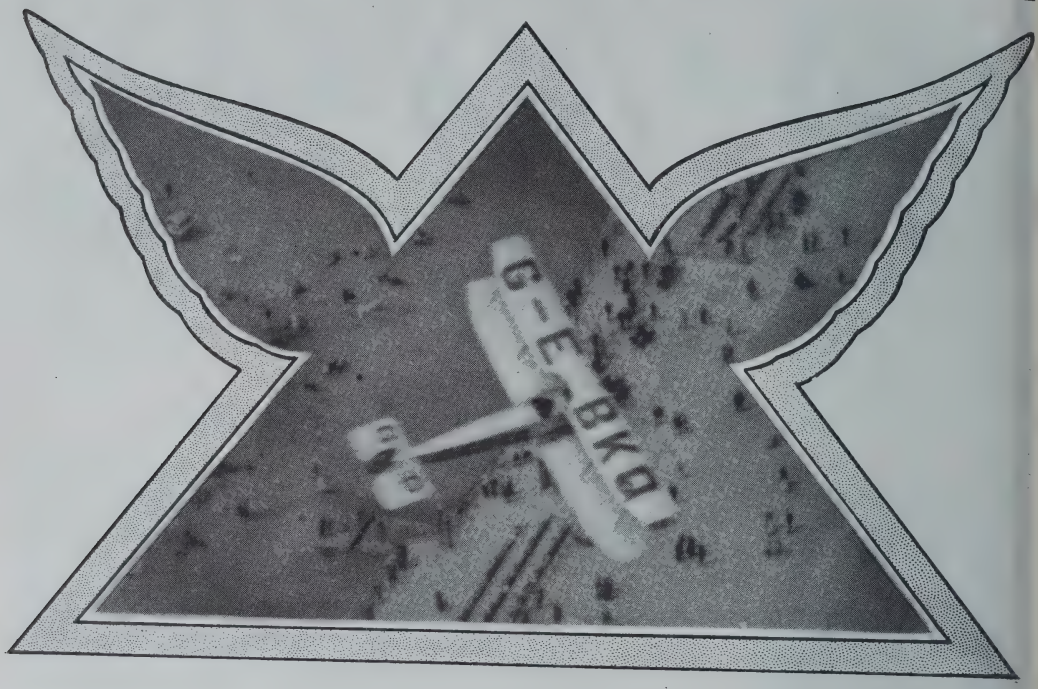
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THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 7.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON BOLSHEVISM IN THE AIRCRAFT INDUSTRY.

Primarily the word Bolshevism is harmless enough. Unfortunately it has taken unto itself a meaning which is distinctly unpleasant to those who love a quiet life either in a comfortable Government office or in pastoral simplicity or in industrial peace. It has come to mean anything from red revolution down to individual grousing or mere peevishness. But the word has been adopted into the English language, and, as is our English custom when we steal a word from somebody else, we make it express what we mean.

In the Russian language the word *bolshe* simply means "more," and its opposite number *menshe* means "less." Traced back to their onomatopœic roots, the words look rather like what they mean. The word "bolshe" has a nice round appearance which suggests a ball, preferably a snowball which grows as it rolls. And doubtless the word "ball" sprang from the same idea in the head of primæval man when he first tried to speak. Similarly the word "menshe" is apparently allied in its origin to such words as mean and minimum and minus. The mere formation of the mouth in sounding the words suggests in the one case something large, though possibly empty of sense, and in the other case something small.

In their political sense the words first came into use at the International Social Democratic Congress somewhere about 1904, just after the Russo-Japanese War, when the majority party turned the adjective *bolshe* into a noun and called themselves *Bolsheviki*. And the minority party called themselves *Mensheviki*.

The Bolsheviks were not only the majority party but they stood for more in every way. They said that they represented the views of the majority of humanity and they demanded more and more of everything for that majority. The Mensheviks, on the other hand, besides being the minority party at the Congress were more moderate in their demands. They merely asked for political concessions and financial considerations which were within the bounds of practical politics. They were not actually mean about it but they did ask for something reasonable, whereas the Bolsheviks, like Oliver Twist, simply kept on asking for more.

And so Bolshevism came to indicate rather an attitude of mind than an actual party in politics. In fact Oliver Twist might very well be described as the typical Bolshevik in English literature.

In the swing of the political pendulum the actual Bolshevik party in Russia became the minority party in the Russian Duma. But they still lived up to their name by continually demanding more for the majority of the people. And one might paraphrase the late Abraham Lincoln's most popular, and very worst, utterance by saying that Bolshevism means, in theory at any rate, government of the people by the majority for the majority—without any respect for intelligent minorities.

Thus, because the Bolshevik leaders were actually in the minority but had more lung power and demanded more than anybody else, a Bolshevik has come to mean practically anybody who is up against constituted authority because he wants more than he has got—which after all is only human nature, so that we are all Bolsheviks at heart more or less. And so the word has come into the English language in that queerly humorous way which is so typical of our countrymen.

If a good officer in one of the Services feels that he has been passed over in the promotion list and starts grousing against the authorities and generally making an ass of him-



THE R.A.F. TEAM.—Left to right (standing): Flg. Off. O'Malley, Flg. Off. Wilson, Flg. Off. Trower, Plt. Off. Franks, Cpl. Christie, Flg. Off. Chambers, L-AC. Hampton, Plt. Off. The Earl of Bandon. Left to right (seated): Flt. Lt. Turner, Flt. Lt. Rose, Sq. Ldr. Lowe, Sq. Ldr. Russell, Flt. Lt. Bryson, Flt. Lt. Chick, Cpl Johnson. Seated on the ground: Mr. T. Vile (Referee), Flt. Lt. Elmhirst.

self, one says that it is a pity that such a good chap should have gone Bolshie. And if father comes down to breakfast in the morning with a liver and grumbles at his bacon, and little Willie feels frightened of father because he is so angry mother merely tells Willie not to mind, because Daddy is feeling a bit Bolshie this morning. So altogether, if that Bloody Russian revolution of 1917 has done nothing else it has at any rate enlarged the English language.

Aeronautical Bolshevism.

The appositeness of the foregoing remarks lies in the application thereof. At the present moment two kinds of Bolshevism seem to exist in the British Aircraft Industry. One is that the Industry as a whole is going Bolshie against the Air Ministry, in that it wants more orders and means to get them, and is in general rebellion against the self-esteemed experts of the Ministry. And the other is that some few members of the Aircraft Industry, whose names one would not mention even if one knew them, which one does not, seem to be going Bolshie against the Society of British Aircraft Constructors, because they want more orders for themselves and are not particular about how they get them.

Possibly it would be more accurate to describe these latter as Mensheviks in that they are undoubtedly a minority of the Industry and also because in trying to achieve their ends they adopt mean methods which must ultimately defeat themselves.

The first-mentioned form of Bolshevism is like the original Bolshevism in Russia, really rather a healthy sign. More orders and consequent greater prosperity in the Aircraft Industry would mean progress in British aeronautics, the establishment of the Industry on a sound financial basis as advocated years ago by Mr. Winston Churchill, and so the laying of a sound foundation for the Royal Air Force. And that means a more and more sound and bigger First Line of Defence.

This kind of Bolshevism first became apparent as a rebellious spirit against the obstructiveness of the Air Ministry's technical experts and an endeavour to escape from the tyranny of the various little sub-departments manned by those experts.

In this movement the leading Bolshevik was undoubtedly Mr. C. R. Fairey, at that time Chairman of the Society of British Aircraft Constructors, when he deliberately set to work and designed the Fairey Fox in open defiance of the views and pet theories of all the Government experts. His success, at the first attempt, in producing a machine which has proved itself to be streets in front of anything in the World in its class as a two-seater fighter-bomber has not only justified his action, but it has set an example which is now being followed by quite a number of other firms. And, several years ago, Short Brothers built several all-metal machines, which, if they did not go as fast as the Fox, were at any rate defiant pioneers in British all-metal construction.

Also A. V. Roe and Co. Ltd., actually the pioneer firm of the British Aircraft Industry, have designed a whole series of aeroplanes of various types in the design of which the Air Ministry's experts have had not even a finger. The first of them ought to be flying very soon. Then we have the example of the Beardmore firm, for whom Mr. Shackleton has turned out a very handsome and very Hunnish-looking fighter which has been sold to Latvia.

One gathers also that the Armstrong Atlas (since developed into the Ajax), on which Mr. Frank Courtney did such fast time from London to Newcastle in the King's Cup Race last year, was also built quite independently of the approval or disapproval of the Air Ministry's experts. And, if one is not mistaken, Vickers Ltd. have also designed certain aeroplanes which were not submitted to the Air Ministry before being constructed.

On the civilian side the de Havilland Company built the Moth purely as a commercial venture. The Air Ministry had nothing to do with it, which is probably why it is so good.

This particular form of Bolshevism has also spread to the engine section of the Aircraft Industry. A.D.C. Aircraft Ltd built the Cirrus engine without saying by your leave or thank you to anybody, and it proved to be an immediate success. And it was only seven months after the first Cirrus engine was built, that the type was actually put into production which could never have happened if the Air Ministry's experts had had a hand in it.

For, on the other hand, a particularly promising three cylinder engine for light aeroplanes, the two-cylinder version of which was utterly spoiled by the interference of Air Ministry experts, has been something like two years in the experimental stage and is still not ready for the market which is waiting for it.

And one has a strong suspicion that, although the first five types of Bristol Jupiters have been approved by Air Ministry experts to the extent of having passed their type tests under official supervision, the next and latest type—the number of which must not be mentioned because it happens to be on the Air Ministry's Secret List although it is flying day by day between Croydon and Bristol—was developed by Mr. Roy Fedden and the Bristol Engine Works without much assistance from experts at the Air Ministry or Farnborough.

Furthermore, although one may be wrong, one doubts whether the new Vee-type Napier and the very latest development of the well-tried Rolls-Royce Falcon owe very much to Air Ministry design either.

The Benefits of Bolshevism.

It may be seen therefore that there is a very general tendency in the Aircraft Industry to break away from the control of the Air Ministry's technical departments. And in every case the breakaway has been for the good. Whatever progress may have been made in British aircraft during the past year has been made quite distinctly in spite of Government control and not because of it. Therefore this particular kind of Bolshevism against the Government is highly to be commended. Ultimately it leads in two directions (a) towards a free and indepenedent Aircraft Industry, and (b) towards definite progress in design, and consequently towards better British aircraft.

A free and independent Aircraft Industry is bound in the end to get business abroad. So long as our aircraft firms are solely concerned with building machines for the Air Force they cannot get foreign business. In the first place the machines they are building for the R.A.F. obviously cannot be sold to foreign Air Services. And it is only reasonable that the Industry should be prevented from selling a colourable imitation of such machines abroad. But if the firms branch out entirely on their own initiative, and build aeroplanes which are not only better built than any other machines in the World, as are practically all British aeroplanes, but also have a better performance, then they can be sold to foreign countries.

Under the law of the land the British Government has the right to prohibit the export of war material, even to friendly nations. And under that law the Government could prohibit the export of fighting aeroplanes. But if those fighting aeroplanes have been built and offered to the Air Force, and if the Air Force does not want them, and if they are then ordered by foreign countries, then one doubts whether any



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Feb. 4	Pernambuco to Rio de Janeiro	1260	11 „ 50 „
„ 9	Rio de Janeiro to Monte Video	1200	12 „ 12 „
„ 10	Monte Video to Buenos Aires	150	1 „ 20 „
	Total	6259 miles in	59 hrs. 35 min.

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Government Department would dare to act in constraint of British trade and forbid the makers to export them.

Also the free and independent manufacture of aeroplanes in such a way must produce progress in design. Because then every firm will be competing in an open market and must sell its machines on their merits instead of selling them, as frequently happens at present, because they happen to agree with some particular official's pet fads in the way of design.

If rumours about the cuts in aircraft orders for 1926-27 be correct the Aircraft Industry will find itself practically bound to launch out on Bolshevistic designs. For its only hope of existing will be to get foreign orders, or alternatively to produce machines so much better than anything that the Air Force has got that the Air Ministry will be forced by public opinion and for the sake of its own existence to ask for a Supplementary Vote to buy new and improved aeroplanes.

Out of evil cometh good. And it is quite possible that a cut in aircraft orders for the R.A.F. may force our Aircraft Industry into an aggressive policy which will ultimately make its fortune. The Englishman is always at his best when he is fighting with his back against the wall.

The Need for a Sound Industry.

In its innermost consciousness the Air Council knows very well that its own existence depends on a strong and well-equipped Aircraft Industry. And so a bold and united front on the part of the Society of British Aircraft Constructors, although it may be apparently fighting the Air Ministry, can in the end only react for the benefit of the Air Ministry.

Not very long ago Sir Hugh Trenchard stated publicly that the wastage of aircraft in a big war would be approximately 90 per cent. per month. That means to say that if we hold even 100 per cent. reserve of aircraft, which we do not, the Air Force would be out of action at the end of two months' war. And a feeble and impoverished Aircraft Industry would not stand the remotest chance of producing aeroplanes during those two months to replace the wastage of war. Which would mean not only that the Air Force would go out of action but the whole Air Ministry and quite possibly the whole country would go with it.

It must be remembered, moreover, that even 100 per cent. reserve only means one reserve machine for each machine at present in the possession of existing squadrons of the R.A.F. And if the R.A.F. were mobilised for war, all the reserve personnel of officers and men would be called up, with the result that the reserve pilots alone would absorb a very large percentage of the reserve machines. Consequently there is not, in fact, one reserve machine for each pilot at present serving with an existing squadron.

For anything like a first-class war we have to reckon on increasing our output of aircraft to something like ten times the present capacity of the existing factories. Possibly if these existing factories were to start working night shifts they could double their present output. But that would be very little use in time of war.

All sorts of outside firms engaged on what are at present luxury trades, such as piano making, gramophone making, motor-car making and so forth would have to be roped in and taught how to make aircraft, or parts of aircraft, under the supervision of the existing firms. Which makes it all the more necessary that the existing firms should maintain a full staff of draughtsmen, designers, shop foremen, charge hands and so forth, some of whom could be sent as instructors to the firms who would be roped in as auxiliaries. That is another side-issue of maintaining the present aircraft Industry in a healthy condition.

But even without that, it is obviously essential that the existing firms should be kept reasonably well supplied with orders so that they can go ahead with new designs.

War-Time Output.

The other day one of our leading aircraft constructors, a man of remarkable foresight and business ability, was asked by a Government official how long he thought it would take him to increase his present output to ten times the amount. He replied that it would take him something like ten months.

He said that, supposing his present output were *X* machines per week, he could put it up to *2X* or perhaps *3X* machines per week within two months. But it would take him five months to organise the supply of parts from auxiliary firms, and to re-organise his own factory so as to deal with the manufacture of such parts as could not be made by auxiliary firms and to handle the supplies of other parts made by the auxiliary firms. And he said that there would be a gap of a month or perhaps two months in the process of that re-organisation when the output of his own factory would be practically *nil*.

Thus he worked out that for the first two months or three months the output might be *2X* or *3X* machines per week. But in the fourth and fifth months it would be *nil*. At the end of the sixth month, with the help of the auxiliary firms, it might be *5X*. And by the tenth month the output might then be *10X*. But during that critical fourth and fifth month the Air Force would get no new machines.

On that argument it becomes evident that a two-month reserve for the Air Force is almost useless. And it is equally evident that if the Air Force is to bring its existing squadrons up to full war strength of eighteen machines per squadron instead of twelve, which is the peace establishment, and if it is to equip the new squadrons formed by calling up reserve pilots, it needs 100 per cent. reserve of first line machines for the very first month of the war.

With the increased output of existing factories it may then maintain those squadrons in the field for two months, or perhaps even three, but it needs at least another 200 per cent. reserve of first-line machines to carry the Air Force over the fourth and fifth months until the combined output of existing firms and auxiliary firms has been raised to five times the present output.

On that showing we need something like a 300 per cent. reserve of machines and all their equipment instead of a mere 100 per cent. which we have at the moment. And it is important to remember that, under the cutting-down scheme which is alleged to be receiving Government approval to-day, our 100 per cent. reserve may all be absorbed within the next twelve months and by the end of this year we may have no reserve at all.

With all this in view the Aircraft Industry is fully justified in adopting a Bolshevik policy of demanding more orders for the good of the majority of the nation. And, as one has already said, if the S.B.A.C. will present a united front it will succeed in getting for itself, and for the Air Ministry, what is really needed for the good of the country.

Back-Stair Bolshevism.

Here is just where the other sort of Bolshevism comes in. A certain, or perhaps one should say uncertain, number of firms in the Industry are going Bolshie against the S.B.A.C. itself. In the hopes of getting more orders for themselves they are secretly undermining the unity of the S.B.A.C.

Not a meeting of the S.B.A.C. takes place without somebody or another going up the back stairs of the Air Ministry and reporting precisely what takes place at the meeting. Sometimes the back-stair Bolsheviks will hint that they are prepared to break away and to accept specifications or to accept demands for performances or to accept designs or to accept prices which the S.B.A.C. as a body had decided were impossible or unpolitic or unreasonable. Sometimes they will merely betray the secrets of the meeting chamber, apparently in the hopes of carrying favour with those in authority.

Always there is a feeling among the officials at the Air Ministry that the Trade is divided against itself and that consequently the Trade can be squeezed to suit official wishes. And we have Scriptural authority for the statement that a house which is divided against itself cannot stand.

The names of the back-stair Bolshies are quite well known in the Air Ministry, and through friends in the Air Ministry they are becoming quite well known in the Trade itself. In the end it is not the Aircraft Industry which will suffer, nor the S.B.A.C. It is the traitors within the camp.

Those who are of the weaker brethren and may feel inclined momentarily to think that it may pay them and their shareholders to rat on the rest of the Trade will do well to think again and remember the proverb "United we stand, divided we fall."

If the Trade hangs together it will pull through. If it does not the individual members will be hanged separately. An efficient and straight firm will always come out on top. An inefficient and straight firm may have a thin time. An efficient but crooked firm will probably come to grief. And an inefficient and crooked firm is sure of a crash.

One makes no insinuations against anybody in particular. But these things are all the common talk of the Trade and the Air Ministry. The S.B.A.C., which is shortly to celebrate its tenth anniversary, did most valuable national service during the War and it is to-day doing service which ultimately is of equal national importance.

The majority of the members of the S.B.A.C. are among one's oldest personal friends, so that one wishes well to the Society both on commercial and personal grounds. One can only hope that these few remarks may have some good effect in placing the Society and the British Aircraft Industry on a sounder footing and so may help towards building those foundations on the soundness of which rests our first Line of Defence.—C. G. G.

A PARIS SHOW THIS YEAR.

The Chambre Syndicale of the French Aircraft Trade announces that there will be an Aero Show in November-December this year. Being the tenth show an effort is to be made to make it especially notable.

THE INSTITUTION OF AERONAUTICAL ENGINEERS.

An informal meeting of the Institution will be held on Tuesday, Feb. 23, at 6.30 p.m. in the rooms of the Junior Institution of Engineers, 39, Victoria Street, S.W.1. The subject will be Commercial Aviation, and Mr. E. W. Parsons will open the discussion.

ACROSS THE ATLANTIC
ON
360 HORSE POWER



Commander Sacadura Cabral and Capt. Gago Coutinho in 1922 flew from Lisbon to St. Paul's Rocks, and from thence to Rio de Janeiro, in each case using the FAIREY SERIES III SEAPLANE fitted with a single ROLLS-ROYCE 'EAGLE' IX engine.

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THE ROYAL AIR FORCE.

The London Gazette

Feb. 9.

General Duties Branch.—The following are granted perm. comns. in the ranks stated (Jan. 1):—Flt. Lt.—C. H. Cahill. Flg. Off.—A. F. James.

The following Plt. Offs. are promoted to the rank of Flg. Off.—P. S. Blockley (Jan. 15); A. C. H. Sharp (Jan. 16); H. C. V. Jolleff, J. H. Sender, C. Clarkson (Jan. 30); J. H. McC. Reynolds, R. Ll. R. Atcherley, J. Warburton, A. B. Kay, J. A. T. Ryde, H. H. Brookes, L. R. W. Tillard, F. W. M. Matthews (Jan. 31).

The following Plt. Offs. on probation are confirmed in rank:—P. E. Berryman, J. W. Busteed, G. P. Butcher, H. A. S. Byrne, E. H. Collinson, M.C. (Maj., 3 E. Surrey Regt., R.A.R.O.), H. V. Crowder, F. G. H. Ewens, J. A. Hawkings, L. M. S. Knight, C. A. C. Patton, E. C. L. Richardson, W. L. Robertson, W. J. M. Spaight, I. R. Sweeting, W. S. Towend, P. G. Tweedie, R. C. Whitle (Jan. 7), A. J. Ll. Hughes (Jan. 13); A. P. Wayte (Feb. 5).

The following Flt. Lts. are placed on half-pay, Scale B:—C. McM. Laing, M.C., A.F.C. (Jan. 31); F. L. Luxmoore, D.F.C. (Feb. 20).

Flg. Off. G. R. Burge is transferred to the Reserve, Class C. (Feb. 10).

The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—D. L. Kavanagh, A. A. Smart (Feb. 10).

Stores Branch.—Plt. Off. on probation A. Amy is confirmed in rank (Jan. 25).

Accountant Branch.—Flg. Off. S. C. Gibbs relinquishes his S.S. comn. on account of ill-health (Feb. 10).

Memorandum.—Flt. Lt. M. C. H. Smith-Carington, T.D., relinquishes his hon. comn. on ceasing to be employed (Jan. 9, 1925).

Reserve of Air Force Officers.—G. N. Warwick is granted a comn. in Class A, General Duties Branch, as a Plt. Off. on probation (Feb. 9).

The following are confirmed in rank:—Flg. Offs.—L. C. Burcher (Dec. 17, 1925); D. H. Drew, A.F.C., D. W. Forshaw, C. S. Kent, A. R. Latham, W. Ledlie (Feb. 4).

Plt. Offs.—C. L. Atkinson, F. M. Brownlee, R. W. Cawston (Feb. 4).

The following Flg. Offs. are transferred from Class A to Class C (Feb. 9):—F. J. E. Feeny, D.S.O., O. D. Freeman. Flg. Off. F. E. C. Finzel is transferred from Class B to Class C (Feb. 4).

Appointments.

Week ending Feb. 15.

General Duties Branch.—Wing Commander T. G. Hetherington, C.B.E., to Air Ministry for duty as an Attached Officer, 17/2.

Squadron Leaders W. B. Farrington, D.S.O., to Air Ministry, 1/3. G. H. Hall, A.F.C., to R.A.F. Depot, 15/2. F. W. Trott, C.B.E., M.C., to Electrical and Wireless School, Flowerdown, 2/2. W. B. Callaway, A.F.C., to H.M.S. *Eagle*, 3/2. A. F. A. Hoopcr, O.B.E., to No. 5 Arm. Car Coy., Iraq, 18/12.

Flight Lieutenants H. A. Whistler, D.S.O., D.F.C., to H.Q., Iraq, 20/1. T. H. Newton, D.S.C., to No. 481 Flight, Mediterranean, 23/1. H. E. P. Wigglesworth, D.S.C., to No. 14 Sqdn., Palestine, 14/1. E. J. McLoughlin, to No. 216 Sqdn., Egypt, 17/1. C. L. King, M.C., D.F.C., to No. 70 Sqdn., Iraq, instead of to Station Commandant, Hinaidi, 15/12. A. A. Ward, to No. 84 Sqdn., Iraq, 17/1. F. G. Gibbons, D.F.C., to Heliopolis Detail, Egypt, 22/1. V. R. Scriven, A.F.C., to R.A.F. Base, Calshot, 15/2. F. J. W. Mellersh, A.F.C., to No. 2 F.T.S., Digby, 1/3. A. G Bond, A.F.C., to Air Ministry, 25/2. E. F. Turner, to No. 10 Group H.Q., Lee-on-Solent, 15/2. G. W. Bentley, D.F.C., to R.A.F. Section, Admiralty Compass Observatory, 8/2. L. G. Maxton, A.F.C., to No. 444 Flight, 1/11. A. M. Wray, M.C., D.F.C., A.F.C., to Armament and Gunnery School, Eastchurch, 15/2.

Flying Officers R. H. W. Empson, to Armament and Gunnery School, Eastchurch, 9/2. M. H. Garnons-Williams, to Armament and Gunnery School, Eastchurch, 15/2. H. R. F. Baxter, to Armament and Gunnery School, Eastchurch, 8/2. J. H. Hargroves, to No. 29 Sqdn., Duxford, 15/3. R. F. Casey, D.F.C., to No. 99 Sqdn., Bircham Newton, 15/2. E. C. Delamain, M.C., to R.A.F. Cadet College, Cranwell, 16/2. N. H. D'Aeth, to No. 444 Flight, 1/11. B. G. Pool, to No. 24 Sqdn., Kenley, 2/2. S. J. Stocks, to Night Flying Flight, Biggin Hill, 15/2. F. H. Bugge and A. W. Daly, to No. 2 F.T.S., Digby, 16/2. J. G. Western, M.B.E., to No. 31 Sqdn., India, 15/1. (Hon. Flt. Lt.) C. M. E. Gifford, to No. 460 Flight, Mediterranean, 22/1. F. P. Inglis, to No. 208 Sqdn., Egypt, 18/1. O. K. Stirling Webb, to No. 45 Sqdn., Iraq, 29/1. E. V. S. Lacey, to No. 14 Sqdn., Palestine, 15/1. K. Maconochie, to No. 55 Sqdn., Iraq, 29/1. C. R. Hancock, to Aircraft Depot, India, 29/1. M. W. Goldie, to No. 84 Sqdn., Iraq, 29/1.

Medical Branch.—Squadron Leader (Hon. Wing Cdr.) E. Huntley, M.B., B.S., to R.A.F. Hospital, Cranwell, 16/2. Flight Lieutenants V. S. Ewing, M.B., to Palestine General Hospital, 14/1. P. A. Hall, M.B., B.A., to R.A.F. Hospital, Halton, 23/2. Flying Officer C. J. S. O'Malley, to R.A.F. Hospital, Halton, 9/2.

Stores Branch.—Flight Lieutenants A. W. Smith, to Station Commandant, Hinaidi, 24/1. L. A. K. But, to The Packing Depot, Ascot, 1/2. Flying Officers A. G. S. Tuke, to School of T.T. (Men), Manston, 1/2. B. E. Essex, to School of Army Co-operation, Old Sarum, 1/2. H. J. Hunter, to No. 1 School of T.T. (Apprentices), Halton, 1/2. W. F. Langdon, to No. 15 Sqdn., Martlesham Heath, 1/2. L. Horwood, M.C., to No. 100 Sqdn., Spittlegate, 1/2. F. B. Ludlow, O.B.E., M.C., to No. 43 Sqdn., Henlow, 13/2. L. L. Bray, to No. 5 F.T.S., Sealand, 1/2. P. Alderson, to No. 2 F.T.S., Digby, 1/2. H. D. Giblett, to No. 58 Sqdn., Worthy Down, 1/2. R. G. Sims, to Air Ministry, 8/12. R. A. Dolton, to No. 39 Sqdn., Spittlegate, 8/2. Pilot Officer L. F. Caunter, to M.T. Repair Depot, Shrewsbury, 4/2.

Fatal Accidents.

The Air Ministry regrets to announce that as the result of an accident to a Vickers Vimy at Winterslow, Salisbury, Wilts., on Feb. 12, Sq. Ldr. Alfred George Horsley-Carr, O.B.E., was killed, No. 157835 Sjt. William Norman Pink, the pilot of the aircraft, being slightly injured, and No. 329752 AC.2. Clifford Bartlett Cardall uninjured.

The Air Ministry regrets to announce that as a result of an accident to a machine of No. 402 Flight, Mediterranean Command, on Feb. 10, Henry Roger Hancox, Lieutenant, R.N. Flg. Off., R.A.F., was seriously injured and died on the following day in the R.N. Hospital, Malta.

The Senior Officers' School.

The following officers of the R.A.F. are among those who joined the Army Senior Officers' School, Sheerness Garrison for the 20th course, on Feb. 15: Sq. Ldrs. P. B. Hunter and G. H. Hall, A.F.C.

The R.A.F. Memorial Fund.

A meeting of the Executive Committee of the R.A.F. Memorial Fund was held at the offices of the Fund on Feb. 10. In the absence of Lord Hugh Cecil the Chair was taken by Air Marshal Sir John Salmond. The Annual Report and the various audited accounts were approved.

It was reported that Vanbrugh Castle School for the orphans of airmen opened for the Spring term on Jan. 6 with 39 boys. The Committee approved of an additional sum of £500 being voted for necessary alterations and Furnishings for the School.

The R.A.F. in Iraq.

A Special Correspondent of *The Daily Telegraph* in Zakho, Kurdistan, in the course of an article on the Military Aspect of the Iraq frontier, states:—

One cannot remain long among these mountains without being impressed by the importance of the Royal Air Force in their defence. Since October, 1922, the Air Vice-Marshal has been General Officer Commanding the military forces of the country, and some remarkable work has been accomplished. Aerodromes are to be found everywhere from Basra to Zakho. Out of a total of forty-three and two-thirds organised squadrons on the active list, eight are stationed in Iraq, as against six in India and four and one-third in Egypt, Palestine, and Transjordania.

Only at home, where there are twenty-five and one-third squadrons, is there a greater concentration, and out of a gross Air Vote for 1925-26 of £21,319,300, £2,741,100 goes to Iraq. The larger part of this sum would, of course, have to be spent, even if every machine were withdrawn, and there is no probability of the size of the air arm being reduced. The policy of expansion over a period of years necessitates the keeping up of at least the present strength, and these squadrons, if they were not here, would still have to be maintained.

As a technical training centre the Air Vice-Marshal in Baghdad, Sir John Higgins, is convinced that Iraq affords uniquely valuable experience. Last year no fewer than 26,000 flying hours were recorded, and these included much long-distance flying, and were carried through with under ten casualties. One squadron actually recorded 504 hours in one month without casualties.

Besides these reasons, the responsibility of having a whole country under its command for military purposes involves much useful routine work of organisation and administration such as the R.A.F. has never before been offered.

From the point of view of the Service the experiment is thus admirable. It is equally advantageous from the point of view of the Civil Government, which is saved heavy expense. For Northern Iraq, owing to the inaccessibility of many of its villages, the absence of railways, the dubious excellence of the roads, and the unruliness of some of the tribesmen, is an extremely difficult country to keep tranquil.

Much loose talk has been directed against the system of aerial bombing employed in refractory neighbourhoods, but to anyone who has experience of Kurdistan (where most of the trouble is located) this must seem at once the cheapest and the most humane way of restoring order. A few aeroplanes are able, after ample warning has been given, to impress unruly sheikhs with respect for authority without inflicting any loss of life, whereas otherwise a column would have to be sent out and expense and bloodshed incurred.

So long as Turkey was in control she was content to let the country stagnate, and thus she could afford to wink at sporadic brigandage and endemic raiding, which flourished to an extent that people accustomed to settled European conditions find it hard to realise. Now that the Government is giving the security without which agriculture and trade cannot flourish, it is no longer possible to let the tribesmen behave as a law unto themselves.

In extreme cases, which are, happily, rare, as the relations between the officials and the peasants are, on the whole, admirable—the R.A.F. is called upon to bomb. But this is only done after all other methods are exhausted, and never merely for such inadequate reasons as a lateness in tax-paying.

The R.A.F. is naturally proud of its charge. Iraq is, in the idiom of the messes, a "wizard show," "wizard" being a pilot's adjective expressive of high praise, just as "Wog" means to the R.A.F. a native citizen of Iraq, "to boob" to do something foolish, and to "hit the deck" to make an unsuccessful landing.

The Third Annual R.A.F. (India) Reunion Dinner.

The annual R.A.F. (India) Reunion Dinner for Officers who have served with the R.A.F. in India will be held this year at the Savoy Hotel at 7.30 p.m. (for 8 p.m.) on March 27 (the day of the R.A.F. v. Army Rugby football match at Twickenham). Tickets 16s. 6d. (exclusive of wines). Evening dress and miniatures to be worn.

It is requested that applications for tickets be made as early as possible, accompanied by remittances, to Flt. Lt. C. A. Elliott, R.A.F. Station, S. Farnborough, Hants, from whom full details can be obtained.

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The R.A.F. (Scottish) Reunion Dinner.

The R.A.F. (Scottish) Re-Union Club will hold its third annual dinner at Ferguson and Forrester's Restaurant, Buchanan Street, Glasgow, on Mar. 5, at 7.30 p.m.

Tickets, 8s. 6d. each, may be obtained from A. N. Kingwill, 191, Sandy Road, Renfrew. A remittance covering the number of tickets required should be enclosed with the application.

R.A.F. SPORTS AND PASTIMES.

Boxing.

R.A.F. Team Championships—Senior Division—*Semi-finals.*

Henlow beat Flowerdown by 15 points to 12, at Flowerdown.

Officers.

Light-weight: Flg. Off. Bird (Henlow), beat Flg. Off. Tristan. *Welter:* Flg. Off. Thomas (Flowerdown) beat Flg. Off. Jezzard. *Middle:* Flg. Off. Badcock (Flowerdown) beat Flg. Off. Macdonald.

Airmen.

Bantam: AC. Ware (Henlow) beat AC. Westoby. *Feather:* AC. Carrol (Flowerdown) beat Cpl. Fort. *Light:* AC. Garratt (Henlow) beat AC. Paine. *Welter:* AC. Perritt (Henlow) beat AC. Bell. *Middle:* AC. Bushnell-Wye (Henlow) beat AC. Gregory. *Heavy:* AC. Watt (Henlow) beat AC. Deane.

Manston beat Uxbridge by 18 points to 8, at Manston. Although all the bouts were won by Manston they were each closely contested and the points do not give a fair indication of the relative merits of the two teams. Possibly this was one of the most sporting Service tournaments ever held in the R.A.F.

Officers.

Light-weight: Flg. Off. Lancaster beat Flg. Off. Mattock. *Welter:* Flg. Off. Larman beat Flt. Lt. Hollinghurst. *Middle:* Flg. Off. Cannon beat Flg. Off. Kelly.

Airmen.

Bantam: AC. Callicott beat L-AC. Lauder. *Feather:* AC. Boteler beat AC. Scroggins. *Light:* AC. Garratt beat AC. Tatum. *Welter:* AC. Page beat Cpl. Broadway. *Middle:* AC. House beat AC Leahy. *Heavy:* AC. James beat Cpl. Eyles. *Six Round Contests:* Sjt. Fleming (Aldershot) beat L-AC. Williamson (Henlow); Cpl. Rollason (Halton) beat Sjt.-Instr. Elliott (Army P.T. Staff, Aldershot); Cpl. Holdcroft (Bordon) beat AC. May (Manston): L-AC. Willison (S. of T.T.) beat AC. Charman (No. 2 Sqdn.).

Junior Division—2nd Round.—Central Flying School walked over; Gosport scratched.

Martlesham beat Eastchurch by 12 points to 7, at Martlesham.

Officers.

Welter: Flg. Off. Wilson (Martlesham) unopposed. *Middle:* Plt. Off. Note (Martlesham) unopposed.

Airmen.

Bantam: AC. Oakshot (Martlesham) beat AC. Finch. *Feather:* AC. Lightfoot (Martlesham) beat AC. Barrington. *Light:* AC. White (Eastchurch) beat AC. Cripps. *Welter:* AC. Warren (Eastchurch) beat L-AC Button. *Middle:* L-AC. Johnson (Martlesham) beat L-AC. Sexton.

Shrewsbury beat Sealand by 4 fights to 2, at Sealand. The points in this match were equal and the match was subsequently awarded to Shrewsbury as having the greater number of wins.

Officers.

Welter: Plt. Off. Taylor (Sealand) beat Major French. *Middle:* Plt. Off. Allen (Sealand) unopposed.

Airmen

Bantam: L-AC. Hill (Sealand) beat L-AC. Barker. *Feather:* AC. Pikesley (Shrewsbury) beat AC. Taylor (Sealand). *Light:* AC. Begley (Shrewsbury) beat L-AC. Thacker. *Welter:* AC. Stevens (Shrewsbury) beat AC. Green. *Middle:* L-AC. Gates (Shrewsbury) beat AC. Barnard.

Duxford beat Digby by 13 points to 8, at Duxford. The holders of the championship won all the bouts in this match, with the exception of the Officers' Middle-weight.

Officers.

Welter: Flg. Off. Wiltshire beat Plt. Off. Young. *Middle:* Plt. Off. Merrett beat Plt. Off. Bold.

Airmen.

Bantam: AC. Black beat AC. Goddard. *Feather:* L-AC. Read beat AC. Davis. *Light:* L-AC. Roberts beat AC. Devlin. *Welter:* AC. McCann beat Cpl. Davies. *Middle:* AC. Bailey beat AC. Core.

R.A.F. *versus* The Civil Service.

At Uxbridge, on Feb. 5, the R.A.F. beat the Civil Service in a match of eight contests, each decided over four rounds.

Bantam-weights: AC. Callicott (R.A.F.) k.o. E. B. Davis (C.S.) in the 3rd round.

Feather-weights: L-AC. Boteler (R.A.F.) k.o. A. J. W. Murray (C.S.) in the 2nd round. AC. Bridge (R.A.F.) beat J. J. Williams (C.S.) on points.

Light-weights: F-S. Stone (R.A.F.) beat C. F. Way (C.S.) on points. C. A. Wale (C.S.) beat L-AC. Patterson (R.A.F.) on points.

Welter-weights: AC.1. Page (R.A.F.) beat A. H. Newlyn (C.S.) in the 2nd round.

Middle-weights: F. E. Field (C.S.) Beat L-AC. House (R.A.F.) on points.

Light-heavy-weights: W. A. Lynch (C.S.) beat AC. Rudder (R.A.F.) in 3 rounds, Rudder being ordered to retire by the doctor owing to a damaged eye.

Hockey.

R.A.F. v. Eastern Counties :—The Eastern Counties beat the R.A.F. at Uxbridge by 9 goals to 2. The visitors attacked from the start and were much faster than the R.A.F.. At half-time they were leading by 5 goals to 1.

Play was more even in the second half, the R.A.F. half-backs playing well.

THE ROYAL AIR FORCE VERSUS THE ROYAL NAVY.

The R.A.F. were beaten by the R.N. at Twickenham on Feb. 13 by a goal and a try (8 points) to a try (3 points).

This fixture has never led to a more desperate battle than the one fought at Twickenham last Saturday. It was most unscientific Rugger. The passing on both sides was wild and the handling awful. But the tackling was marvellous.

The speed at which the whole game was played makes it rather difficult to determine the actual cause of the R.A.F.'s defeat, but the trouble seemed to lie in the scrimmages. Although the Air Force held their own in actual shoving nine times out of ten the Navy got the ball, apparently through superior hooking and heeling. And the Navy were better in the loose. Lieut. D. Orr-Ewing, R.N., was particularly good in this game. In fact insufficient use of their feet, in and out of the scrum, lost the match for the R.A.F.

The Navy's scrum half, Able Seaman Knapman, is a wonder. He never lost an opportunity, and survived a fearful battering. It was mainly through his efforts that Sub.-Lieut. Lee scored the winning try.

The first part of the game was pretty even, the Navy pressing slightly and the R.A.F. fighting every inch. There were thirty minutes of hard going, including an attempt by Sq. Ldr. Lowe to drop a goal from a penalty near the half-way line, before the Air Force scored the first try from a splendid forward rush headed by Flt. Lts. Chick and Rose, the latter touching down. The Navy returned to the attack and for about fifteen minutes were only a few yards from the Air Force line. About 7,000 people held their breath most of the time, and Sq. Ldr. Russell saved magnificently twice. But the pressure was too great and Sub.-Lt. Lee broke through for a try. Half-time and three points all.

The second half was even fiercer than the first and neither side showed the slightest signs of tiring. The Navy managed to start their three-quarter line moving once or twice but the Air Force tackling broke them down. Also the Navy's handling was very faulty.

The Air Force three-quarters, on the other hand, were starved, particularly Plt. Off. Lord Bandon, who has sure hands and a fine turn of speed. (He ran second in the quarter-mile R.A.F. Individual Championships at Uxbridge last June.) His tackling, too, is in the right style, as opposed to the tackling of one or two of the R.A.F. forwards, who are inclined to go far too high.

The Air Force forwards were now showing good form in the loose, but they were closely marked by the Navy backs, Shipwright Hoskin, the Navy full-back, who is rather like the former England and Navy full-back, Gilbert both in style and appearance, was particularly deadly.

About fifteen minutes before the end the dogged perseverance of A.B. Knapman had its reward, and Sub.-Lt. Lee went over between the posts. Master-at-Arms Luddington converted.



WELL HELD.—A Navy player who has just taken a pass, and still holds the ball under his left arm, being tackled by the R.A.F.

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TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

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C P.

The Air Force attacked again, and for a few minutes looked like scoring, but the Navy managed to hold on to the end. For the last ten minutes the R.A.F. were palpably a beaten team. The men individually fought hard, but their combination had gone to pieces.

Beyond the failure by the forwards to heel the ball, one or two weak points in the Air Force team were noticeable to the mere onlooker. Flt. Lt. Bryson was inclined to double back instead of feeding his wing. Sq. Ldr. Lowe did not appear fit and except for one instance when he overtook and collared a Navy three-quarter in possession of the ball, was practically a passenger. Flg. Off. Chambers, at stand-off half, was slow in passing, and Flg. Off. Wilson was uncertain in fielding the ball and prone to a prayerful position.

Judging from the Army's form against the Harlequins on Jan. 30, the R.A.F. team, as it stands at present, will crash pretty badly on Mar. 6, unless they can find their feet and a new inside left three-quarter.—C. M. MCA.

The teams were :—

THE ROYAL NAVY.—Shipwright S. Hoskin (H.M.S. *Vivid*), back; Lieut. H. C. Cumberbatch (H.M.S./M. *H.23*), Sub.-Lieut. T. S. Lee (H.M.S. *Tiger*), Sub-Lieut. R. W. Armytage (H.M.S. *Pembroke*), and Lieut. M. Richmond (H.M.S. *Victory*), three-quarter backs; Lieut. C. R. Garrett (H.M.S. *Victory*) and Able-Seaman C. R. Knapman (H.M.S. *Vivid*), half-backs; Master-at-Arms W. G. E. Luddington (H.M.S. *Thunderer*), Able-Seaman W. Paddon (H.M.S. *Vivid*), Lieut. R. D. Fricker (H.M.S. *Thunderer*), Lieut. G. C. F. Branson (H.M.S. *Excellent*), Lieut. P. B. R. W. William-Powlett (H.M.S. *Savage*), Lieut. D. Orr-Ewing (H.M.S. *Vivid*), Lieut. A. A. Havers (H.M.S. *Pembroke*), and Sub-Lieut. H. T. Armstrong (H.M.S. *Excellent*), forwards.

THE ROYAL AIR FORCE.—Flg. Off. C. B. Wilson (No. 22 Sqdn), back; Plt. Off. the Earl of Bandon (No. 4 Sqdn), Sq. Ldr. C. N. Lowe (No. 602 Sqdn.), Flt. Lt. O. C. Bryson (Cadet College, Cranwell), and Flg. Off. S. H. G. Trower (Northolt), three-quarter backs; Flg. Off. P. J. Chambers (Cadet College, Cranwell) and Sq. Ldr. J. C. Russell (No. 3 Sqdn.), half-backs; Flt. Lt. J. S. Chick (Experimental Section, R.A.F.), Flt. Lt. E. F. Turner (No. 502 Sqdn.), Flt. Lt. T. Rose (No. 13 Sqdn.), Cpl. N. W. Johnson (Record Office), Cpl. M. G. Christie (R.A.F. Depôt, Shrewsbury), Plt. Off. J. G. Franks (No. 56 Sqdn.), L-AC. J. F. Hampton (Record Office), and Flg. Off. C. J. S. O'Malley (T.T. School, Halton), forwards.

THE PIPE LINE.

On Feb. 11, Sq. Ldr. A. R. C. Cooper gave a very interesting lecture on "A Visit to the Anglo-Persian Oil Fields," at the United Services Institute. At the outset he stated that he wished to disarm criticism by quoting that "to lecture was to instruct," and that he was unable to do that as he had visited the fields while on local leave from Iraq, and what he had to tell was only the result of this short tour.

By means of a sketch map and other lantern slides, from excellent photographs taken by himself and prepared by the R.A.F. Photographic Section, at Hinaidi, he took his audience on a personally conducted tour from the refinery and head offices at Mohammerah and Abadan, on the Persian Gulf, to the fields at the far end of the all-important pipe-line.

He showed us the pumping stations and the drilling machines. He described the various and hazardous methods of drilling minutely. The audience was told about the wonderful way in which the A.P.O.C. look after their employees, about the organisation of the supplies, and the efficiency of the modern and adequately-equipped hospitals and staffs.

When it is realised that the fields are some 140 miles from the refinery, and that the oil has to be carried along pipes via pumping stations for that distance, over a barren, mountainous, and inhospitable country, with a summer heat of 125° in the shade, then a glimpse only is possible of what a triumph for British Engineers this colossal adventure is.

Incidentally the achievement nearly never was so, one was told, in the discussion following the lecture. In 1903 a cable had been sent from London to stop work on this apparently fruitless effort. It happened, however, that Lord Curzon, who was touring the Persian Gulf at the time, was told by an interested party of the existence of a place, the interpretation of the name of which meant "The Plain of Oil." Old Persian travellers told of this place, ancient books spoke of a temple of Solomon, the flares and torches of which were kept alight by the local oil.

Lord Curzon became interested, and, what was more, he was able to get the Burma Oil Company interested. The oil was found.

At the close the lecturer was complimented by the Chairman and others on the able way in which he had gathered and imparted information gained in so short a tour.

Sir Charles Greenaway, chairman of the A.P.O.C., and other speakers, took part in a short discussion afterwards. Rear-Admiral N. Richmond, C.B., laid stress on the great national importance of these fields.

This statement was borne out in the lecture, in the story of F.7, the famous well which has never once failed "*and of its own self kept the whole British Navy supplied with oil during the last war.*"

This well has now supplied over five million tons of oil, and it is now the custom to raise one's hat to it when passing, "as a tribute to its loyalty."

The conditions for native labour are unique. Examinations are set for skilled native workers. According to their skill in practical work, so they are set to work and paid. There are schools for them in which to study and pass more difficult examinations, for more difficult jobs, carrying higher pay—a labour policy not likely to become popular in England.

At the close of the discussion a gentleman arose and asked the lecturer whether information could be given as to the rainfall in the Sahara. The answer was in the negative.—B. S. L.

AIR AFFAIRS IN PARLIAMENT.

FRANCE AND ITALY.

In the House of Commons on Feb. 10, in reply to a question by MR. GILLETT, the SECRETARY OF STATE FOR FOREIGN AFFAIRS circulated details of the amounts spent during the last three years by France and Italy on their Fighting Services and the percentage of the total national expenditure involved. The details included the following figures :—Percentage of the total national expenditure spent on the Fighting Forces, France, 1923, 13.3; 1924, 12.3; 1925, 16.9. Italy, 1923, 14.3; 1924, 14.6; 1925, 16.5.

In reply to a further question by MR. GILLETT on the same date, the UNDER-SECRETARY OF STATE FOR AIR said that he did not think that the French and Italian Governments had recently published exact statistics as to the strength of their respective Air Forces, but according to his information the first line strength of the French Air Services at the present time was approximately 1,300 machines, whilst the corresponding figure for the Italian Force was 600 machines. There had been little change in these figures during the past three years, but the French figure represented a small increase as compared with 1924, whilst the Italian Air Force was in the early stages of a considerable programme of expansion. As regards personnel, it was not practicable to give figures since a large number of those employed on air duties were found from the Navy and Army both in France and in Italy.

R.A.F. INSURANCE.

In the House of Commons on Feb. 10, in reply to questions by MR. HARRISON and MR. ALBERY, the SECRETARY OF STATE FOR AIR said that he had been in communication with the Life Offices Association of which all the important companies were members, and negotiations had now been brought to a conclusion. Terms had been obtained from nearly 20 companies which were considerably more favourable than those hitherto obtainable, more particularly for officers of the middle and senior ranks on whom the burden of insurance fell most heavily. In the case of a squadron leader, for example, the extra annual premium quoted to cover flying risks had been reduced from five guineas per cent. to two guineas per cent. and this extra premium was limited to five years instead of being payable over the whole period for which cover was desired. A small additional charge was made in some cases to cover future war risks and service abroad. An alternative method by which the extra premium was charged on each flight subject to a fixed maximum payable in one year and in total had also been offered by some of the companies. The question of the extension of the scheme to other ranks in the Air Force was being taken up with the Life Offices' Association.

THE GUGGENHEIM FUND.

Mr. H. Waterford Braithwaite, of 144, Abbey House, Victoria Street, S.W.1, has issued a manifesto concerning the visit of Mr. Harry Guggenheim to Europe. The following extracts cover such part as concerns readers of this paper :—

The Board of Trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics have authorised the President and the Vice-President of the Fund, Mr Harry F. Guggenheim and Admiral H. I. Cone respectively, to go to Europe and make a study of the development of civil aviation in Europe.

These gentlemen are now making a tour of the principal countries in Europe where aeronautics has made particular progress.

Prior to his departure Mr. H. F. Guggenheim issued the following statement :—"Upon the results of the studies in Europe, and the purely tentative outline already published of the possible lines of activity of the Fund, the policy of the Fund will be evolved by the Trustees and definite work shall proceed.

"Europe has undoubtedly made greater strides in the development of civil aviation than the United States. This is probably a temporary advantage which is largely the result of the policy of direct government subsidy to commercial aviation in almost all European countries. In the long run the lack of direct subsidy in the United States should be greatly to our advantage in establishing the industry perhaps a little late but eventually on a sound, economic basis. In order that the Fund may have the benefit of the experience and thought of those competent in the subject in other countries, it is important that a study of aeronautics in Europe in its relation to the purposes of the Fund should be made

"Admiral Cone and Harry F. Guggenheim will devote the next three months to the study of the development of aeronautics in Europe. In the meantime we have asked for suggestions from competent persons throughout the United States for the best method of procedure for the Fund to accomplish its task of accelerating the development of civil aviation.

"When they return to this country the trustees will carefully consider the whole situation in the light of the various reports and evolve a policy for future action."

One is a trifle doubtful as to who are "we" and who are "they" in the two last paragraphs, and whether these paragraphs are the statement of Mr. Harry Guggenheim or of the Trustees or of Mr. Waterford Braithwaite. But one can assure Mr. Guggenheim that everybody over here will be pleased to meet him and will be prepared to demonstrate to him that Civil Aviation in the States is far more advanced than it is in Europe.


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"MOTH"
has the
AEROBATIC
CERTIFICATE OF
AIRWORTHINESS

SPAIN TO ARGENTINA.

Commandante Franco, Captain Ruiz de Alva and an engineer who have flown from Spain to South America on a Dornier Wal flying boat with two 450 h.p. Napier Lion engines, arrived at Monte Video on Feb. 9, after a non-stop journey of 1,200 miles from Rio de Janeiro.

At midday on Feb. 10 they left Monte Video for Buenos Aires, a distance of 120 miles, arriving 80 minutes later.

The portions of South America touched by this flight have been *en fête*, and, throughout their journey from Pernambuco to Buenos Aires, the crew of the "Ne Plus Ultra" have been welcomed and entertained with wild enthusiasm.

On arrival at Buenos Aires the crew were officially received by President de Alvear, and police protection was necessary in order to protect them from the enthusiasm of the crowds.

The King of Spain has conferred the order of the Golden Key, which carries with it the rank of Chamberlain, on Commandante Franco, Captain Ruiz de Alva, and Ensign Duran.

The Spanish aviators intend to continue their journey by flying across the Argentine Republic to Santiago de Chile, a distance of 720 miles, involving the crossing of the Andes which rise to heights of over 20,000 feet.

Three Chilean military aviators flying Vickers Valparaiso biplanes, left Santiago, on Feb. 11, to fly to Buenos Aires, in order to welcome the arrival of the Dornier Wal, and thereafter to escort the Spaniards back to Santiago. Two of the machines arrived safely at Buenos Aires, but the third machine was caught in a whirlwind while passing over the peaks of the Andes, and crashed. The pilot, Lieut. Montecinos, and his mechanic, were badly injured.

A peculiar result of the flight is the issuing of a general amnesty by the Spanish Government in celebration of the successful crossing of the Atlantic, which results in all prisoners being allowed a reduction of one-tenth of their term of imprisonment. This mode of celebration of the great event applies to misdemeanants of every kind.

THE FLIGHT TOWARDS THE CAPE.

Mr. Cobham, Mr. Elliott and Mr. Emmott arrived at Kimberly, on Feb. 15. They expect to reach Cape Town on Feb. 17. Here they will remain for five days when they will attempt a spectacular high-speed flight home.

On Mar. 1, four machines of the R.A.F., Fairey III Ds (Napier), will start from Cairo on an attempt to fly to Cape Town and back via Cairo to London. Wing Cdr. Pulford will be in command.

Perhaps somewhere in Africa the R.A.F. expedition will meet Mr. Cobham. Wing Cdr. Pulford, with the charm of Stanley, will say, "Mr. Cobham, I presume," and Mr. Cobham, with Livingstonian courtesy, will reply, "Of course."

THE BRITANNIA TROPHY.

The award of the Britannia Trophy will be made within the next few days. The R.Ae. Club have decided that a specific performance counts for the year in which it was completed and so Mr. Cobham's flight to Rangoon and back becomes eligible. One is of the opinion that as most of the flight was made over a well-worn route, it is not the outstanding flight of the year, though one thinks that the Trophy might well be awarded to Mr. Elliott for keeping a single Puma running without trouble for the whole flight.

Personally one thinks that the best flight of the year was that of Mr. F. L. Barnard on the first day of the King's Cup Race. This was truly an individual triumph. The Siskin machine and Jaguar engine, apart from the fact that the former did not break and the latter did not stop, cannot take the praise, so there can be no trade advertisement to detract from what was an actual lone-hand exhibition of individual skill in piloting and navigating at high speed in a dense fog. On the top of all this Mr. Barnard's performance on the air lines for the past six years deserve recognition of the kind which goes with the award of the Britannia Trophy.

Another fine performance to be considered is Flt. Lt. (now Sq. Ldr.) Booth's handling of the R.33 when she broke away in the gale. Here the argument against it is that the performance was not premeditated, was done as an act of self-preservation, and was not a lone-hand achievement. Here again there can be no advertising.

The work of Mr. J. D. Parkinson in carrying over 10,000 passengers in the year without an accident of any kind—not even a strained wire—should also be considered as a single-handed achievement worthy of recognition. Certainly such work has done much to promote interest in flying.

THE SCHNEIDER TROPHY.

Secreter and Secreter. Everybody knows and no one will tell. Rumour follows rumour. Denial follows denial. A says that if B is to build a machine for the contest, then they A will too. Then A says they won't but as C is going to build they, A and B, won't let C have it all his own way, and couldn't C, the Americans and the French be persuaded to postpone until 1927, anyway. And so we go on and on and on and on and on and on.—G. D.

THE R.Ae.C. ANNUAL GENERAL MEETING.

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Wednesday, Mar. 31, at 6 p.m., at 3, Clifford Street, London, W.1.

Notices of motion for the Annual General Meeting must be received by the Secretary not less than 21 days before the meeting and must be signed by at least five Members.

Committee.—In accordance with the Rules the Committee shall consist of 18 Members. Members are elected to serve for two years, half the Committee retiring annually. Retiring Members are eligible for re-election. The retiring Members of the Committee are :—

Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C., Ernest C. Bucknall, The Lord Edward A. Grosvenor, Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P., Lieut.-Col. M. O'Gorman, C.B., Air Commodore C. R. Samson, C.M.G., D.S.O., R.A.F., The Duke of Sutherland.

Owing to the death of Group-Capt. C. F. Kilner there are only eight members of the present Committee retiring this year.

Any two members of the Club may nominate a member to serve on the Committee provided the consent of the member has been previously obtained. The name of the Member thus nominated, with the name of his proposer and seconder, must be sent in writing to the Secretary not less than 14 days before the Annual General Meeting.

MR. KOOLHOVEN'S MOVE.

His many friends in this country will be interested to know that Mr. Frederick Koolhoven has recently left the employ of the Nationale Vliegtuig Industrie of the Hague.

Mr. Koolhoven joined the N.V.I. at its formation in 1922 and has produced several very interesting machines besides having put down on paper designs for a number of others. The F.K.31, the big two-seater fighter monoplane with the Bristol Jupiter engine, has proved itself to be one of the finest two-seaters yet produced. So efficient has it been proved that it is being manfactured under licence in France by M. de Monge and it is also being constructed in Finland and elsewhere. His three-engined passenger machine, several examples of which have been ordered by the K.L.M. Air Line, has shown a high degree of efficiency and we are likely to see a great deal more of it in the future. He has also produced a very interesting training machine which should do good work.

One has always regarded Mr. Koolhoven as being one of the very few really inspired designers in the World. His ideas are always original and one can never remember him making a bad aeroplane. Some of his aeroplanes have been better than others, but one cannot recollect that any of his designs have been valueless.

The little Bat which he designed late in the War 1914-18 for the British Aerial Transport Co. Ltd., the moving spirit in which was Sir Samuel (now Lord) Waring, who was understood to have acquired his title for his services to aviation, is still believed by experienced pilots to have been the best fighting machine ever produced at anything like its power. The big F.K.26, which was the first genuine passenger-carrying machine ever built, was an extraordinarily advanced production for its day and would be considered a very good passenger machine even now.

Perhaps Mr. Koolhoven's most remarkable achievement was in designing in 1914 the Armstrong-Whitworth biplanes, commonly known as the Big and Little Acks, which were intended to compete with the officially designed B.E. series. As a matter of fact they had a better performance and were equally stable. In war they proved so good that quite a number of the "Big Acks." were still on active service at the time of the Armistice.

Before joining Armstrong Whitworth's just before the War, Mr. Koolhoven was chief designer to the British Deperdussin Company which, unfortunately, had to go into liquidation owing to bad trade in 1914. The British Deperdussins designed by him and built under his supervision were also remarkable machines in their day, especially that with the 100 Anzani engine on which the late John Porte did such extraordinary flying. Although built in 1914, it survived something like two years of active service in the War before it was crashed.

Mr. Koolhoven's previous work as a designer was shown when in conjunction with M. Bêchéreau he designed the Deperdussin in France which was the first vehicle of any kind which ever covered 120 miles in one hour, which was its performance in the Gordon Bennett Race in 1913.

Prior to that, Mr. Koolhoven had been designer at the Minerva Company and had not only designed but driven their highly successful racing cars. He was also an aeroplane pilot of some note himself in those early days of 1911 and 1912.

Altogether there are very few people in aviation who have at the same time Mr. Koolhoven's practical experience, both of engines and aeroplanes, and his knowledge of aerodynamics.

One only hopes that his exceptional ability may not long be left idle and that he may continue to contribute to the development of aircraft design.—C. G. G.

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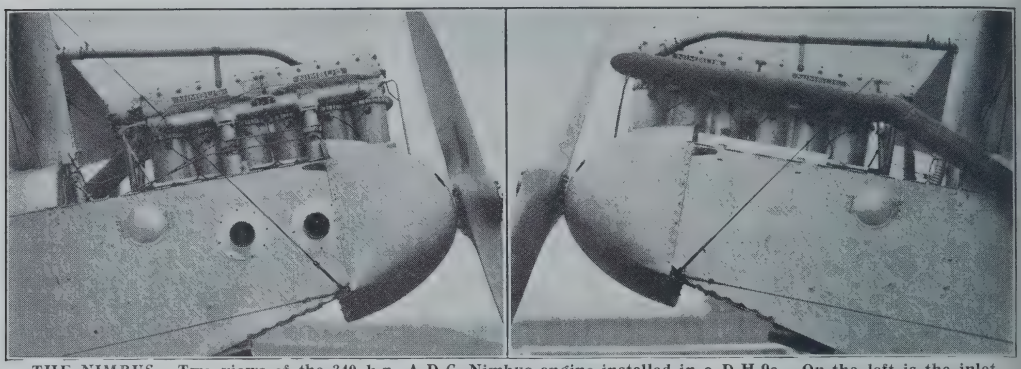
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THE 340 H.P. A.D.C.-NIMBUS ENGINE.



THE NIMBUS.—Two views of the 340 h.p. A.D.C.-Nimbus engine installed in a D.H.9a. On the left is the inlet side and on the right is the exhaust side.

The Nimbus aero-engine which has for some months past been the subject of vague rumours of one kind and another, has been developed by A.D.C. Aircraft Ltd. in pursuance of that firm's established policy. As is well known the firm holds the stock of aircraft and aircraft engines which were surplus to the requirements of the R.A.F. at the end of the war, and has during the period of its existence carried on a very large trade—largely with foreign governments—which has done much to enhance the prestige of British aircraft throughout the world.

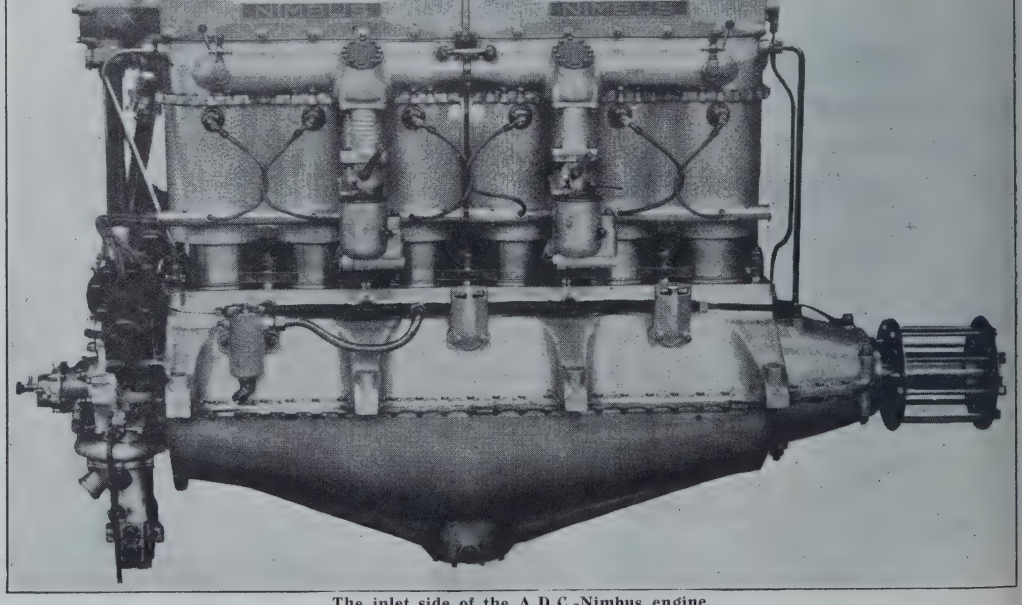
The stock of surplus aircraft and engines is not unlimited, and even if it were progress in design must eventually lead to the obsolescence of all the war-time products in which the firm have so far mainly dealt. To meet this state of affairs the firm have decided to put upon the market more modern types of engines and aircraft of their own design and manufacture. As far as is possible it is desirable that these new products should be developments of the types they already handle.

The Puma engine, the whole stocks of which are held by A.D.C. Aircraft Ltd, has proved exceedingly popular both for military and civil work, as a thoroughly reliable, medium-power engine. As, however, it was designed quite early in the war, it is naturally somewhat heavier and bulkier for its output than an engine of similar type of up-to-date design need be. The A.D.C. firm have, therefore, taken the Puma as a starting point and have redesigned it in the light of modern knowledge, and the Nimbus is the result. Major Halford, who was responsible for the original design of the Puma, has also carried out this development, and the Nimbus therefore may claim to inherit the reputation of the Puma very much as though the two engines were consecutive products of the same manufacturing and designing organisation.

As may be seen by the illustrations, the Nimbus differs very little in external appearance and arrangement from the Puma. It is in fact entirely interchangeable with that engine, and fits the same bearers. A few minor components of the two engines are also interchangeable, but the essential parts of the Nimbus have been redesigned and were built throughout at the A.D.C. works.

The Nimbus is of 5 m/m. larger bore than the Puma, and is rated at 300/340 h.p. (instead of 230 h.p.) for a dry weight which is 30 lbs. less than the weight of the Puma. The Nimbus thus weighs under 2 lbs. per h.p. (maximum) as against nearly 2.5 lbs. per h.p. for the Puma—a very marked advance. In fact the Nimbus must be the lightest aero-engine of the six-cylinder vertical type yet produced.

The Puma cylinder arrangement has been followed in its broad lines in the new engine, but in detail has been considerably modified. Cylinder barrels are of steel, with closed heads, and three cylinders are enclosed in one common water-jacket, which is an aluminium alloy casting. Each of the two blocks is completed by a cylinder head block also of a light alloy.



The inlet side of the A.D.C.-Nimbus engine.

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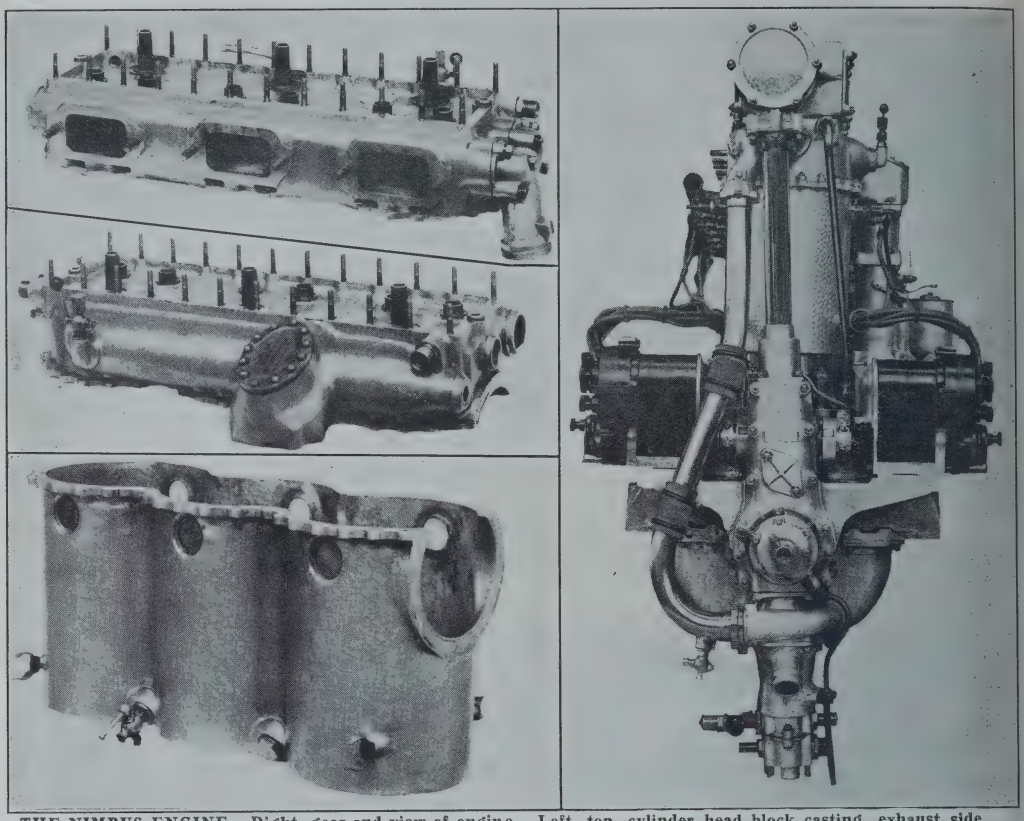


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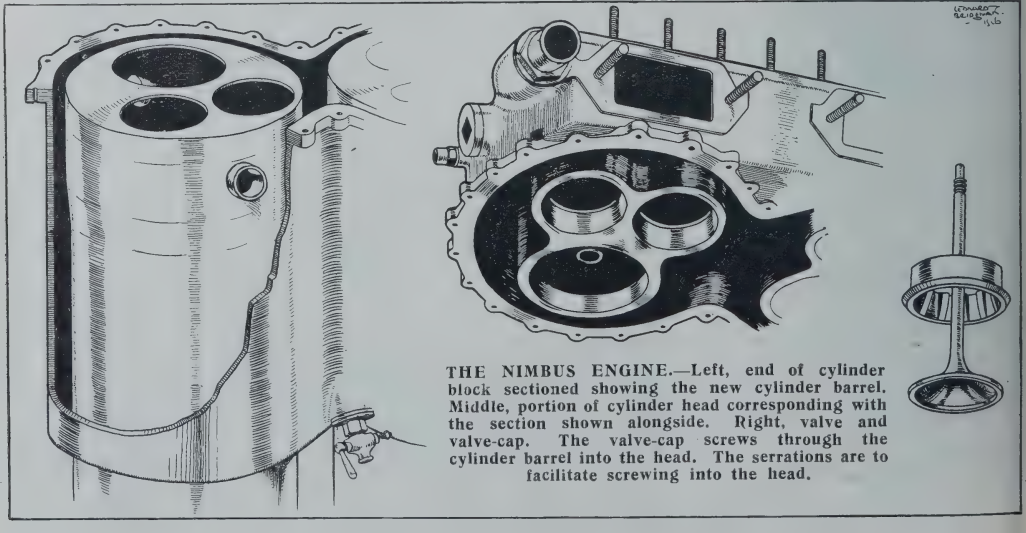
THE NIMBUS ENGINE.—Right, gear end view of engine. Left, top, cylinder head block casting, exhaust side. Centre, the same from inlet side. Bottom, a water jacket block.

The cylinder barrels are screwed into the base of the water-jacket casting, and the head casting is secured by studs and nuts to the water-jacket, and by the valve seats to the cylinder barrel itself. These valve seats screw directly into the head casting, and are provided, inside the seating, with castellations which fit a special screwing-in tool. The details of this construction are shown both in sketches and in photographs.

There are three valves per cylinder—one large inlet and two smaller exhaust valves. The induction manifolds are cast into the cylinder-head blocks, each of which is provided with a single carburettor flange.

Two of these engines have been constructed, and have been subjected to very severe tests by the A.D.C. firm, both on the bench and in the air. Altogether these engines have done something like 150 hours' running—a large proportion of the total at full throttle and some of it at excessive speeds. Air Ministry type tests have not yet been completed, but 55 hours (20 on the brake and 35 on a calibrated airscrew) have been run under official observation and type test conditions.

In addition a standard D.H.9 has been fitted with a Nimbus, and comparative tests made on the machine so fitted, and on the same machine with a Puma. Carrying precisely the same

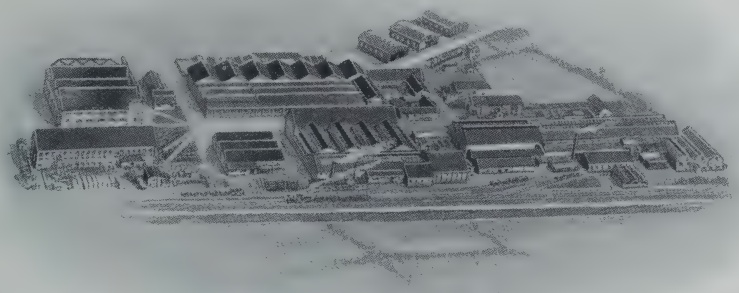


THE NIMBUS ENGINE.—Left, end of cylinder block sectioned showing the new cylinder barrel. Middle, portion of cylinder head corresponding with the section shown alongside. Right, valve and valve-cap. The valve-cap screws through the cylinder barrel into the head. The serrations are to facilitate screwing into the head.

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load, the speed at sea level increased from 115 m.p.h. to 135 m.p.h., and at 10,000 ft. the speed rose from 110 to 121 m.p.h., and at 15,000 ft. from 103 to 114 m.p.h. The climb to 10,000 ft. was 18.8 mins. with the Puma and 12 mins. with the Nimbus, and the service ceiling rose from 15,500 ft. (in 44 mins.) with the Puma, to 19,500 ft. (44 mins.) with the Nimbus.

SPECIFICATION.

Bore	152 m/m.
Stroke	190 m/m.
Compression ratio	5·4
Normal output	305 b.h.p. at 1,450 r.p.m.
Maximum output	335 b.h.p. at 1,600 r.p.m.
Fuel consumption	0.52 pints/h.p. hour.
Oil consumption	.015 pints/h.p. hour
Weight, dry	665 lbs.

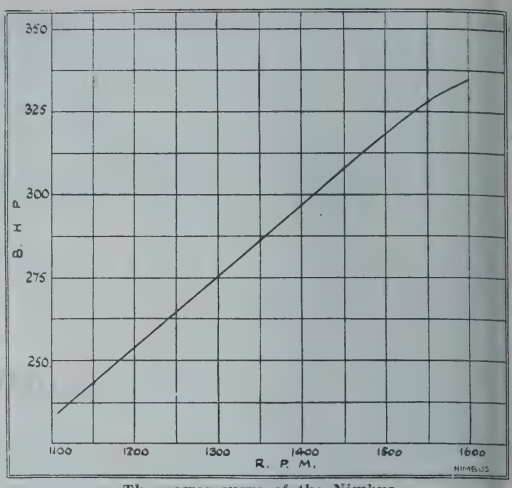
BEHIND THE NIMBUS.

On Saturday one had the pleasure of flying behind the Nimbus engine. It has been installed in a D.H.9 three-seater the top speed of which is now about 135 m.p.h. With Mr. Perry as pilot, another passenger and all of one's (recently acquired) large bulk, the machine got off the ground, against a wind of about 5 m.p.h., in about three times its own length.

As the engine is opened fully the back of the seat seems to hit one hard in the back and stay there. The climb is really remarkable, and is both spectacular to watch and to experience. When the engine was first installed in the D.H.9 it was fitted with an unsuitable airscrew and there was a noticeable roughness. This has now quite disappeared.

The Nimbus is some 30 lbs. lighter than the Puma, from which it was developed, and this fact tends to make the Nimbus-D.H.9 rather nicer to fly. On the particular day of the flight to which one is referring, which was Saturday last, Croydon Aerodrome was enveloped in a heavy mist, but as soon as we came to Purley we emerged into brilliant sunshine, and visibility was wonderful. It was distinctly a curious feeling after flying in this glorious weather, suddenly to plunge back into the gloom and murk as we made for the aerodrome. The dividing line between fog and sunshine seemed to be the new Brighton road, and this line was at times particularly clearly defined.

With the present fashion for three-engined commercial machines of about 1,000 h.p., it seems that there is a big future for the Nimbus, and already one learns that there is a prospect of three being fitted to the Koolhoven machine which has been built for K.L.M., and which is at present equipped with three Pumas.—G. D.



The power curve of the Nimbus.

THE HANDLEY PAGE W.10.

The Handley Page type W.10, four of which are being built for Imperial Airways, are improved versions of the W.8 type which has already done such excellent service on the Continental routes. They differ from the earlier models in service in being fitted with two Napier Lion engines of 450 h.p. each, instead of two Rolls-Royce Eagle IX engines of 360 h.p. (The original W.8 had two Napiers.)

One of the features is the use of a new type of rudder, fitted

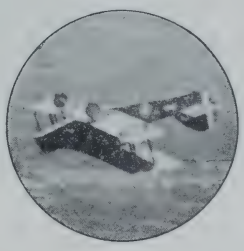


INTERIOR DECORATION.—The cabin of the W.10. Mr. W. P. Savage, Chief Engineer of Handley Page Ltd., is seated on the right wearing "bamboo glasses."



Looping photographs by courtesy of "Flight."

THE Boulton & Paul Bugle with Napier Lion Engines. Entirely of Metal Construction.





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THE REVISED VERSION.—The new Handley Page W.10 (two Napier) just before her first test flight. The cabin now extends as far as the pilot's seat and a tail of Farman Goliath type has been fitted. This has overcome the rudder troubles which have been so tiresome in all the W.8 and Hyderabad types previously.

with a balance of the inset hinge type, instead of the earlier horn balance arrangement. The new rudder appears to be excellently balanced and to be entirely devoid of that instability at small angles which is apt to be marked with the horn type of balance. As a result the machine shows no tendency whatever to yaw alternately to one and to the other side of its course—even if the pilot's feet are removed from the rudder bar.

Another detail also connected with the controls is the use of differential ailerons operated by a new and very simple mechanism. The operating cables from the controls, instead of passing direct to the aileron levers, are fastened off upon large-diameter pulleys, after passing one turn round the pulleys. Fixed to the same frame, and rotating with these pulleys, are pulleys of a spiral form. The cables which are attached to the aileron levers pass round the spiral sheaves and are fixed at their ends to the frame of the compound pulley so formed.

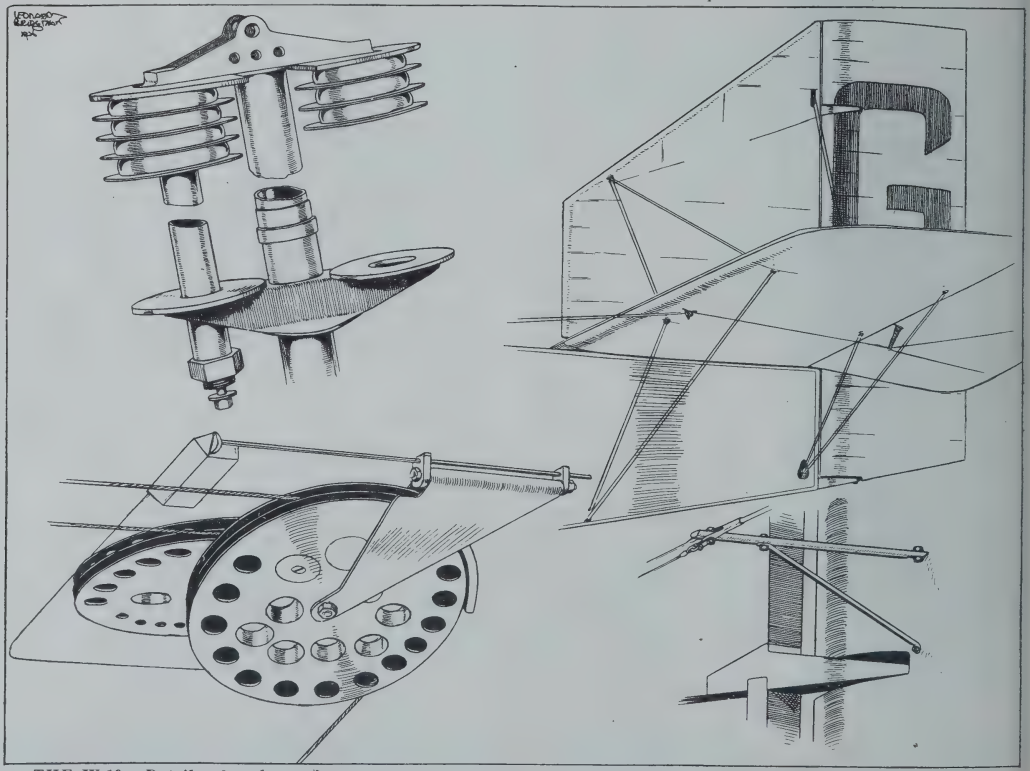
For a given movement of the control wheel the compound pulleys on the wings all rotate through an equal angle—but those on the one side in the opposite direction to those on the other. But owing to the spiral nature of the second set of sheaves, the cable to the lever of an aileron that is to move upwards wraps round a spiral of increasing radius, whereas that operating a downward moving aileron wraps round a spiral of decreasing radius. Thus the upward movement of the ailerons on one side is greater than the downward movement of those on the other, and this differential action becomes more and more marked as the degree of displacement from the central position becomes more marked.

Another interesting detail is the use of an entirely metallic structure for the engine mountings. The usual wooden engine bearers are replaced by a channel section steel member.

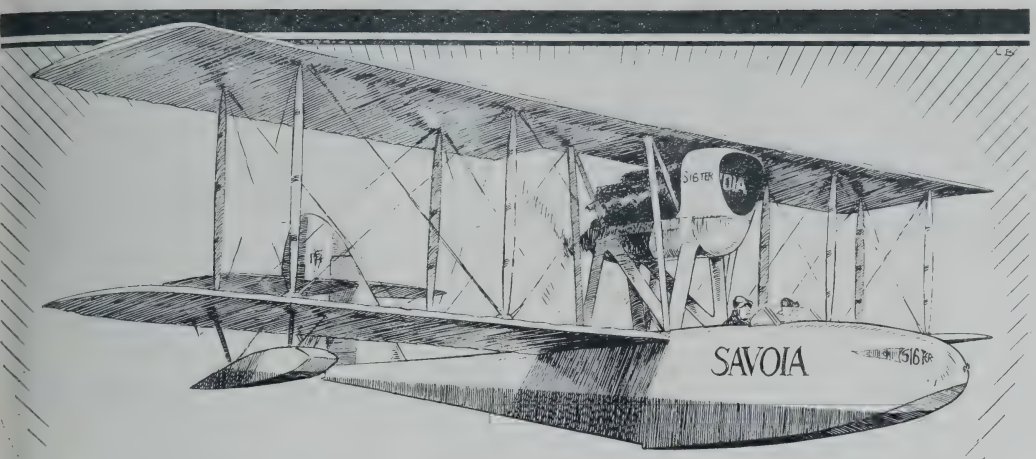
The W.10 has practically the same cabin accommodation as the three-engined Hampstead—with fourteen seats for passengers. The internal arrangements and provision for heating and ventilation of the Hampstead have already been described and this description in all particulars applies to the W.10. The only difference is that the hot air supply is taken from an exhaust muff on each engine, whereas on the three-engined type it is all taken from the central engine.

The engines are fitted with long exhaust pipes, fitted with closed ends and perforated with a large number of small holes on the side facing away from the cabin. This silencing arrangement appears to be very effective.

The overall dimensions of the W.10 are understood to be identical with those of the W.8, but no data as to weights and performances are at present available.



THE W.10.—Details of undercarriage suspension, showing a series of rubber blocks inserted between steel discs. A general view of the new tail unit. Arrangement of differential aileron control pulleys on wing. The nearer pulley operates the bottom aileron control lever and the other operates the top lever, the wire passing through the plane. Detail of balanced rudder hinge and rudder control lever.



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REMAINS TAUT WHATEVER THE TEMPERATURE.

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MODERN AMERICAN ENGINE DEVELOPMENT.

After Mr. Charles Lawrance, of the Wright Aeronautical Corporation, had read his interesting paper to the Royal Aeronautical Society on Feb. 4, a discussion took place, the gist of which was as follows :—

Wing Cdr. Hynes said the air-cooled Liberty interested him on account of its overhead camshaft. How was this persuaded to operate on an air-cooled cylinder line without serious trouble from the effects of cylinder expansion? Mr. Lawrance's power plant weight, including cooling and gears, ought to be extended farther. The author had mentioned gears. A geared engine was necessarily heavier than an ungeared one, but the airscrew efficiency might be greater. If power plant weights were based on thrust h.p. instead of b.h.p. the geared engine—if gearing were justified—would show its merit clearly on this basis. Mr. Lawrance mentioned that the Roots blower type of supercharger could only be used with the carburettor on the delivery side of the blower. How did they arrange the pressure balance on the carburettor?

Mr. Thomas said that for the water-cooled engines the author had assumed .6 lbs./h.p. for water and radiators. All the engines seemed to be of high speed type and for such engines the figure seemed high. Could actual figures for water installations be given. Mr. Lawrance had not gone far enough in his weight comparison as between A.C. and W.C. types. The weight of fuel and oil necessary for various lengths of flight should be included to give a fair comparison.

Major Barlow, as representing a firm decidedly interested in an American type of engine, expressed his appreciation of the paper. Everybody would agree that American engines had developed at a surprising rate recently and that we could learn a great deal from them. To a large extent he felt that the efficiency and reliability of the American engines was due to the materials used for their construction. The D.12 engine in this country was rated at 430 h.p. and ran on a 6/1 compression using a fuel containing 30% of aromatics with an added 20% of benzol. Two features of American engine work were of outstanding interest—the very remarkable progress of supercharging and the development of inverted engines.

Col. Bristow remarked that American valves appeared to resemble salads—they needed oil and salt. The high bearing loadings of American engines had been approached closely in this country. He would like to know whether in their development of reduction gears they expected to meet most trouble with the gears or with the engines. Our experience was that you could build a gear to stand up to a given engine, but then the engine might break up. If the engine would stand up to the gear, the gear was liable to fail. What was the relative severity of American and British type tests. And when testing an air-cooled engine did they rely on the airscrew or use a fan for cooling?

Mr. Fedden said there was a very great difference between the old 50-hour test and the new 100-hour test now in force in this country. He agreed that there was no evidence that we had reached the limit of bearing loads, but so far he had not approached the figures quoted by Mr. Lawrance. What was the quantity of oil circulated per hour on these heavily-loaded engines? It was curious that they had not reached the limit of lateral loading in pistons mentioned by the author, although their pistons were more heavily loaded than his. Had they experienced difficulties with casting Y alloy? The qualities of this material were admitted, but they had not been able to cast it satisfactorily as yet. He had been very interested in the salt-cooled valve, and as soon as he heard of the original experiments he had tried both salt and mercury-cooling, but had not found any benefit. He found it necessary to use four valves per cylinder on large cylinders. What was Mr. Lawrance's experience of magneto reliability in America? He noticed on one of Mr. Lawrance's slides an Aeromarine starter fitted to the engine. He was interested in this starter and would like to know the author's opinion of it. Did it produce large torque recoil effects?

Mr. Lawrance, in reply, said the drive to the air-cooled Liberty camshaft was splined to allow for expansion of cylinders as a whole. The cylinder barrel expansion was not very much greater than for a water-cooled engine, and the biggest difference was in the expansion of the aluminium head. In practice no serious trouble seemed to arise from distortion of camshaft bearings. Rating on thrust h.p. would be valuable, but practically it could not be done as thrust h.p. depended on too many factors. The Roots supercharger worked under the same conditions as the turbo type so far as carburettors went. He did not see why the speed of the engines should make any difference to the cooling required. All the engines in question developed about the same m.e.p. and had to get rid of the same amount of heat per h.p. hour. It might be argued that fuel and oil consumption should be considered in connection with power plant weight, and it was true that the lowest consumptions were obtained with water-cooled engines. But it was only for very long flights that the water-cooled type had an advantage.

They were not allowed to use any benzol in their fuel fo type tests. McCook Field used benzol for special tests, bu their engines had to operate on their standard fuel whic was steadily growing worse in quality. It might becom necessary to go back to lower compressions to overcome thi difficulty. As to whether they expected the engines or th gears to break up first, they had in most gears used som form of spring coupling to protect both.

The American type test as laid down by the authoritie called for ½-hour at full power, 45 hours at 9/10 power, an 4½ hours at full power. It was comparable with the olde British test, but not as severe as the present 100-hour test The American engine builders, however, had felt this to b not severe enough and had substituted for it 50 hours a full power, shutting down and stripping at 5, 15, and 3 hours. They were thus able to detect incipient failures an to discover why an engine was likely to fail instead of jus carrying on till they had a wreck without any certain know ledge of why the wreck had occurred. After such a test the usually proceeded to run others at increasing revs. In thi way they were able to develop a new engine with the leas waste of time.

Air-cooled engines were usually run on a four-bladed clut which gave rather more than the blast of an average pro peller.

If Mr. Fedden's valves cooled satisfactorily without sal filling then he would certainly not be justified in using it But for valves which did overheat it certainly did work wonders. The E.4 Hispano type with the original valves gave endless trouble in training work often after two or three hours' running. Salt filled valves gave them a regular life o 100-150 hours between overhauls.

He was at a loss to know how Mr. Fedden got away with the very heavy lateral loadings on his pistons. He would have to go back to America and announce that the British had got them beat on this subject and set to work to equal them. Magnetos he thought were just as reliable in England as in America. As to the Aeromarine starter it was a very satisfactory device and he thought Mr. Fedden would be very glad to have it. It took a little while to wind up, but then it threw any engine round like nothing else he knew of. There was a very considerable torque and the crank-case had to stand this. Mr. Fedden's crankcases were designed for lightness and would probably object, but there was no reason why they should not be stiffened to meet this.

A CLYDE-SIDE DEMONSTRATION.

The first of the two-seater fighting aeroplanes designed by Mr. W. S. Shackleton, the Beardmore W.B. XXVI fitted with the 360 h.p. Rolls-Royce Eagle IX engine, and constructed by William Beardmore and Co. Ltd., Glasgow, for the Latvian Government, was recently subjected to its official tests when results of almost a sensational nature were recorded.

This demonstration, which was carried out by Mr. A. N. Kingwill, the chief pilot of the Beardmore Company, followed the usual speed, climb and altitude tests during the course of which it was proved that the machine has a ratio of top speed to landing speed exceeding 3 to 1.

In the course of the demonstration the machine was dived at over 200 miles an hour and immediately looped. The "falling leaf" was demonstrated and the machine rolled and spun. High speed cornering tests with the angle of bank approaching the vertical were made, after which Mr. Kingwill proceeded to give what was considered to be the most important demonstration of all. Keeping the machine along a horizontal path the engine was gradually throttled down until the stalling angle was reached. The throttle was then closed and the stick pulled right back. The machine took up an angle of quite 60° with the horizontal and began to sink on an even keel. It was demonstrated that in this fully stalled condition all the controls were quite operative it being shown that the machine could be rocked laterally or pitched at will.

A similar demonstration was then given with the engine full on. Mr. Kingwill flew horizontally at about 1,000 feet and began to climb quite vertically until the machine stalled and started to fall tail first. The engine was full on, and it was noticed that the nose of the machine merely dropped a few feet and began to sink. The angle of the fuselage was as before, about 60° to the horizontal. It was again demonstrated that all controls were fully operative.

The importance of this feature cannot be exaggerated. As is well known, with practically every machine a stall is followed by a side roll and a nose dive.

With the W.B. XXVI a stall merely becomes a safe and useful manœuvre. In view of the fact that a special panel has been working for several years to ascertain the reason and remedy for the dangerous nose dive following a stall this new Beardmore machine would seem to be sensational in that it embodies all the attributes desired without departing from the more or less usual type of control.

CELLULOSE ACETATE

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DOPES AND VARNISHES

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For tautening, weather-proofing ; also petrol and castor-oil proof.

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EXCLUSIVELY USED ON ALL BRITISH AND ALLIED WAR PLANES.

Used on FIRST AEROPLANE ACROSS ATLANTIC, FIRST AEROPLANE TO AUSTRALIA, AND R.34 AIRSHIP TO AMERICA AND BACK.

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Supermarine "Southampton" Twin Engined Flying Boat.
(TWO 450 H.P. NAPIER LION ENGINES.)

AS AN EXAMPLE OF WIDE RANGE OF DESIGN. CONTRAST THE ABOVE TWIN ENGINED MACHINE WITH THE **SUPERMARINE NAPIER S4** MONOPLANE DESIGNED AND CONSTRUCTED FOR THE SCHNEIDER CUP RACE, 1925.

SUPERMARINE

ENGLAND.

THE LIGHT AEROPLANE CLUBS.

The London Aeroplane Club.

The total flying during the week was 12 hrs. 25 mins.

At present the Club has only one machine in service. A new D.H. Moth has been ordered to replace G-EBLU, but delivery is not expected until the end of March. Negotiations to acquire a machine to carry on in the interim, have not, so far, been successful.

During the week the following members had flying instruction:—W. Hay, W. E. P. Johnson, E. P. Brough, G. Quirk, R. C. Brighten, H. O. Richardson, R. Thomas, H. P. Hunt, J. H. Saffrey, C. E. Murrell, R. C. Presland, J. S. M. Michie, R. Malcolm, S. O. Bradshaw, L. Anderson, N. Jones, G. N. Howe.

The following members flew solo:—Mrs. Eliott-Lynn, G. H. Craig, Sq. Ldr. M. E. A. Wright, G. N. Warwick, P. G. Lucas.

Capt. F. G. M. Sparks, on leave from his course at the Central Flying School, Upavon, assisted in the flying instruction during the week-end.

The Lancashire Aero Club.

Flying took place on Wednesday and Saturday only. Mr. Scholes and Mr. Cantrill gave dual instruction to the following:—H. Stern (15 mins.), M. Lacayo (5 mins.), R. Williams (15 mins.), D. Dyson (20 mins.), C. Parker (45 mins.), J. Leeming (55 mins.), C. Agar (1 hr. 5 mins.), H. Hardy (40 mins.), H. Smith (1 hr. 35 mins.), C. Colley (35 mins.), A. Macnair (40 mins.), J. Wilkinson (35 mins.).

Solo flights were made by J. Wilkinson (25 mins.), M. Lacayo (10 mins.). Tests occupied 35 mins.

Total dual, 7 hrs. 45 mins. Total solo, 35 mins. Joy Rides to three members, 45 mins. Total time flown, 9 hrs. 40 mins.

The above was all done on one machine, G-EBMQ, presented to the Club by Sir Charles Wakefield.

Mr. N. T. Stack has been appointed the Club's instructor. He will begin at Woodford on Wednesday, Feb. 24. Appointments may be made by 'phone, letter, or in the book kept for this purpose in the hangar; flying time may not be booked farther than seven days ahead.

Mr. Stack will arrange to give instruction and permit solos whenever weather permits, and it is hoped that members who can will put in as much time during the week as possible so as not to overcrowd the week-ends.

[Mr. Neville Stack served in the R.F.C. and R.A.F. during the War and was a clever scout pilot. After the Armistice he took to passenger-flying and put up a fine log-book record of freedom from accidents. Later he rejoined the R.A.F. with a Short Service Commission and did good work in Irak on Vickers Vimys and Vernons, earning the personal commendation of Sir John Salmond. He is an excellent organiser and a good disciplinarian, so he should be very useful in his present job.—C. G. G.]

The Club's second Dinner Dance will be held at the Midland Hotel, Manchester, on Mar. 12 (Friday); Tickets are 35s. each; as before there will be a Carbaret Show during the evening. Tickets are already well sold. At the last Dance the Committee were forced to return money to many people who applied late after all the tickets had been disposed of. Early application in this case is advisable.

The Newcastle-upon-Tyne Aero Club.

Flying report for week ending Sunday, Feb. 14.—

Very bad weather conditions were experienced during the week but some flying was carried out each day.

The times were—Dual, 13 hrs. 20 mins. Solo, 5 hrs. 22 mins. Tests 25 mins. Passenger, 30 mins. Total, 19 hrs. 30 mins., all on "L.X.," which is on the way towards 300 hrs. now.

The following members flew under instruction with Major Packman:—Miss C. R. Leathart, Mr. T. R. MacMillan, Mr. R. M. Stobie, Mr. G. H. Twine, Mrs. V. Marcks, Mr. L. Smith, Mr. C. Thompson, Mr. L. de Loriol, Mr. W. Todd, Mr. A. D. Bruce.

The following flew solo, or with passengers—all "A" Pilots:—Mr. W. Baxter Ellis, with Mr. P. F. Heppell as passenger, on one flight, and Mr. H. Ellis on another. Mr. R. M. Stobie, with Mrs. Kemp as passenger. Mr. R. N. Thompson, with Mr. Smith.

It is suggested that Mr. Heppell wondered what it felt like to fly as passenger, hence the flight with Mr. Ellis. Mr. N. S. Todd was unable to attend the aerodrome during the week. It is believed that he is searching for a suitable "hangar."

It was whispered in the Club-house during the week-end that Major Packman was preparing to take the Moth to the Arctic when the exploration season begins again, though the only evidence put forward was that he was now wearing sheepskin (complete with wool) thigh boots. Some members were of opinion, however, that these were quite necessary at Cramlington while Arctic weather is experienced there, so there may be no foundation for this rumour.

The Club was honoured with a visit by a R.A.F. Blackburn machine during the week.

The engine and gadgets for the Gull having arrived, further developments are expected at an early date.

Mr. R. N. Thompson has very kindly presented the Club with a complete Badminton set, marked the courts on the Tarmac near the hanger, and obtained a challenge from his local Club to meet any six Aero Club "loopers, rollers or spinners." So nothing could be more complete. It is hoped that the challenge will be taken up immediately and with the true aviation spirit.

A JOY-RIDE RECORD.

A week or two ago a remark was made in The Aeroplane about the amount of good which is done to aviation by the various joy-ride concerns which promenade the country. In this connection one learns that the Berkshire Aviation Tours carried, among all their pilots, over 32,000 passengers during 1925. As this works out at an average of 640 passengers per week, some idea may be gained of the way in which flying is being popularised.

Certainly the individual record passenger-carrier in this line of business is now Mr. J. D. Parkinson, the senior pilot of the Berkshire Aviation Tours. All told he has carried something like 34,000 passengers since he began joy-ride work several years ago. And the most remarkable part of his record is that between Jan. 1 and Dec. 31, 1925, he has carried over 10,000 passengers, as can be verified from the firm's books.

Moreover, it is worthy of note that not only have the Berkshire Aviation Tours carried their passengers without damage to the passengers themselves but they have actually been free from damage to their own machines while carrying passengers. One is told that not even an axle or wire has been injured during a passenger flight. And, virtue sometimes bringing more than its own reward, there is satisfaction in recording that the firm has paid a comfortable little dividend of 7½% on its capital each year for the past four years.

The firm is now definitely established at Witney Aerodrome ("where the blankets come from") and has its workshops in full running order. All communications should now be sent to that address. One hopes that the firm may continue to increase in importance in the future as it has done in the past.

One of the later activities of the Berkshire Company is display advertising. They always have some thousands of feet of canvas screen round their landing places. Also they have space on their posters and handbills. Such advertising spaces ought to appeal particularly to firms connected with flying and motoring who sell accessories of any kind which would be of interest to the general public.

Considering the hundreds of thousands of people who visit the Berkshire Company's aerodromes in the course of a year it strikes one that their canvas hoardings ought to be quite a good advertising medium for almost anything which is in general use among the public.

In the advertisement for the Berkshire Aviation Tours which appeared in last week's Aeroplane, there were two misprints in the figures and, as this enterprising firm deserves full credit for its astonishingly high statistics, one would like to point out that the number of passengers which they carried during 1924 was 25,000 and not 2,500 as stated in the advertisement, and that the number of handbills distributed has been 250,000.—C. G. G.



USEFUL BROADCASTERS.—Members of the Berkshire Aviation Tours, who have carried over 32,000 passengers during 1925 and have broadcast the doctrines of Aviation to millions of our fellow-countrymen during the year.

CELLON

"THE DOPE OF PROVED EFFICIENCY."

Cellon Doping Schemes provide Efficiency with Economy.

CERRIC CELLULOSE ENAMELS

(REGD.) *(For Application by Spray only.)*

Manufactured in all colours, these provide the ideal finish for Motor Cars. Easily cleaned, unaffected by tar, petrol or rain spots. The polish improves each time the car is cleaned.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 10; Tuesday, 0; Wednesday, 12; Thursday, 14; Friday, 0; Saturday, 4; Sunday, 0.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 24, passengers 62, freight 5 tons.

AIR UNION:

Paris—London: Machines 11, passengers 20, freight 8½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 6, passengers 5, freight 1 ton.

Total number of trips by British Machines, 24, carrying 62 passengers. Foreign Machines, 16, carrying 26 passengers.

Comparative Figures:

Week ending Feb. 14:

Machines, 40; Passengers, 88; Crews, 51; Total personnel, 139.

Corresponding week, 1925:

Machines, 61; Passengers, 78; Crews, 70; Total personnel, 148.

Corresponding week, 1924:

Machines, 50; Passengers, 86; Crews, 78; Total personnel, 164.

Corresponding week, 1923:

Machines, 26; Passengers, 75; Crews, 49; Total personnel, 124.

Corresponding week, 1922:

Machines, 30; Passengers, 57; Crews, 47; Total personnel, 104.

Corresponding week, 1921:

Machines, 29; Passengers, 32; Crews, 35; Total personnel, 67.

Croydon Notes.

The past has been an eventless week at Croydon, at least so far as the daily papers are concerned. No invalid old ladies have gone to Paris in a special Napier-D.H. ambulances nor flown home to die in Rolls-Royce Vulcans. No Rolls-Royce W.8b has flown to Paris in 115 minutes, thereby creating a record for a giant twin-engined machine flown by a pilot with his hair parted in the middle. It looks as though Croydon's untamed publicists have been taking a holiday or that the news editors of the daily papers are beginning to learn something of aviation.

Not a soul hired a Napier-D.H. air express at vast expense to go up and see the sun and no new freighters have been ordered to cope with the enormous goods traffic expected in the spring. Verily Croydon seems to be moribund.

The only hope of a thrill which we can look for with any certainty in the next week is the arrival of the W.10. No doubt this will be described something like this:—"A giant Napier-W.10 air express arrived at the London Air Station to-day piloted by Captain Barnard. This new leviathan of the air carries 14 passengers in luxurious arm-chairs (as a matter of fact they are exceedingly uncomfortable wicker chairs taken out of an old machine). The express is driven by two powerful Napier Lion engines which drive it through the air at 120 m.p.h."

As a matter of fact the machine's full speed is about 110 m.p.h., as speed has been sacrificed to ensure a good take-off. This shows that the builders of commercial machines are beginning to understand the requirements of these craft.

The Bristol Jupiter "of the latest type" is running in open competition with Tennyson's Brook. Since Jan. 4 it has now covered 14,427 miles (almost equal to a flight from London to the Cape *and back*). So far it has done 130 hrs. 10 mins. installed in the Bristol Bloodhound flown by Mr. F. L. Barnard and Lt.-Col Minchin. There have been no replacements and the petrol consumption remains practically constant at 22.5 gallons per hour.

M. Codos continues to fly merrily between Paris and London at a time when he ought to be in bed. The other night he arrived at Croydon in the sort of weather in which one even hesitates to go out and post a most important letter. There is no doubt that M. Codos has made the most important contribution to practical night flying research on the London-Paris route that has yet been made.

The secret of A.D.C. Aircraft's new engine, the Nimbus, about which there have been vague hints, is now out. Elsewhere in this paper it is fully described.

During the week Mr. Perry has been testing Martinsyde-A.D.C.15 and Avro-Lucifers for a foreign Power and has been doing a number of tests and demonstrations with the Nimbus-D.H.9. On Wednesday, Flt. Lt. Shales, of Farnborough, put an Avro-Lucifer through official type tests. On Friday, Sq. Ldr. Haig came and finished the machine, or, rather, finished off the tests and not the machine, which is quite intact.—G. D.

THE HAWKER PARTY.

On Tuesday of last week, Feb. 9, the H. G. Hawker Engineering Co. Ltd. gave a party to its staff and to a number of fortunate friends. Proceedings began with a dinner at Nuthall's at Kingston-on-Thames and continued with a dance which lasted well into the small hours of Wednesday morning.

After dinner the promoters of the feast were speechless—not in the alcoholic sense which might be imagined, but in the much happier and more becoming sense that they insisted on refraining from making speeches. Mr. T. O. M. Sopwith said how pleased he was to see everybody and Mr. Fred Sigrist echoed his remarks and Mr. Maxwell Muller of Vickers Ltd. said how pleased the guests were to be there. And that was all.

Certainly the party was an excellent example of lettin brotherly love continue, for the guests included representatives of several of the leading aircraft firms, such as Mr. Muller, aforesaid, Mr. John Lord of A. V. Roe and Co. Ltd. and Mr. H. Burroughes of the Gloucestershire Aircraft Co. Ltd., as well as several officials from the Air Ministry.

The whole affair was excellently done and reflects great credit on the organising work of Mr. F. S. Spriggs and his Committee.

PERSONAL NOTICES.

DEATHS.

HANCOX.—At Halfar, Malta, on Feb. 11, as the result of a flying accident, Henry Roger Hancox, Lieut. R.N., and Flg. Off. R.A.F. only son of Lieut.-Col. H. P. Hancox, late Royal Inniskilling Fusiliers, aged 27.

Mr. Hancox joined the R.A.F. from the R.N. in June, 1924, and was posted to No. 1 F.T.S., Netheravon, for a course of instruction. In April of this year he was posted to No. 402 (Fleet Fighter) Flight R.A.F., Mediterranean. He had passed the Civil Service Examination for Interpreter. No. 402 Flight is equipped with Fairey Flycatchers.

Mr. Hancox was the author of that delightful series of tales of life in the Fleet Air Arm which have appeared recently—under the title of "Aeronautics"—in *Punch*, and everyone who has read and enjoyed these stories will regret the loss of a writer with a delicious sense of humour who was also very evidently a keen and efficient member of his Service.

HORSLEY-CARR.—On Feb. 12, at Porton, near Salisbury, as the result of a flying accident, Sq. Ldr. Alfred George Horsley-Carr O.B.E., R.A.F.

At the inquest at Salisbury on Feb. 13, Sjt. W. N. Pink said that he was piloting the machine, in which Sq. Ldr. Horsley-Carr and AC Cardall were passengers. The machine (a Vickers Vimy) was specially designed for casting smoke-screens. Visibility was poor. The combined effect of the mist and the smoke-screen caused him to lose his bearings.

Sq. Ldr. Carr was standing beside him to point out the direction. They were in a sort of natural basin. The starboard wing struck a tree, but the witness continued flying in the hope of finding a suitable landing place. Another tree appeared right in front of them and it was impossible to avoid it.

AC. Cardall said that it was impossible to see further than a yard or two and Sjt. Pink could have done nothing more to avoid the accident.

Sq. Ldr. Horsley-Carr joined the York and Lancaster Regt. in 1914 and went to France with them early in 1915. At the end of 1915 he transferred to the R.F.C. and was posted to Egypt. At the beginning of 1917 he formed and commanded the Aerial Gunnery School, Middle East. At the end of 1918 he prepared the air route across the Sudan from Cairo. In 1919 he was in South Russia. He was a Sq. Ldr. in April, 1918.

In February, 1921, he was posted to the Marine and Armament Experimental Establishment, Isle-of-Grain, and in October of the same year to the Armament and Gunnery School, Eastchurch, where he passed as a Qualified Air Armament Officer. In April, 1924, he was attached to the Chemical Warfare Experimental Station, Porton, for Armament Duties. He was 33 years of age and the eldest son of Mr. and Mrs. William Carr, of Barnsley, Yorkshire.

TREMELLEN.—At Heliopolis, Egypt, on Feb. 6, as the result of a flying accident, Arthur Cleverton Tremellen, Flg. Off., No. 4 F.T.S. R.A.F., fourth son of Mr. and Mrs. H. J. Tremellen.

Mr. Tremellen entered the R.A.F. with a S.S. comn. with the rank of Flg. Off. and seniority of Feb. 26, 1924. He was posted to the C.F.S., Upavon, on May 30, 1924, and to No. 4 F.T.S., Abu Sueir, on Jan. 16, 1925.

FORTHCOMING MARRIAGE.

STRATFORD-TUKE—SPARKS.—The engagement is announced between Athol G. Stratford-Tuke, R.A.F., son of Col. G. F. Stratford-Tuke, D.S.O., R.A., and Mrs. Tuke, and Jocelyn, daughter of Mr. and Mrs. J. C. Sparks, of Heytesbury, Wilts

BIRTH.

BISHOP.—On Feb. 15, at 27, Welbeck Street, to Margaret, wife of Lt.-Col. W. A. Bishop, V.C., D.S.O.—a daughter.

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INCORPORATING AERONAUTICAL ENGINEERING
Edited by C. Grey

Vol. XXX. No. 8. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"A FAR-OFF HARBOUR."—(Baring.)



ASHORE:—A typical Wilderness Air Harbour. Telegraph Creek, Stikine River, British Columbia. The machine is a Vickers Viking, minus its wheels to lighten it so that it can get off at high altitudes.

SPANISH FLIGHT TO SOUTH AMERICA

Major Franco's Flight to South America, in which he carried a Marconi A.D.6 Wireless Set and Direction Finding Apparatus, has proved the value of direction finding equipment to an expedition of this kind, as the following reports show:

"*The Direction Finder worked marvellously. I have received bearings at a distance of 700 kilometres.*"

"*In approaching Las Palmas the airmen asked for constant signals from the wireless stations as visibility was bad, and they were greatly assisted by taking frequent bearings.*"

The results attained on this flight establish the direction finder as a necessary addition to the equipment of aircraft flying over long distances.

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FEB. 24, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 8.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months, 32s.
Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
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ON THE AIR ESTIMATES.

Taking them all round the Air Estimates for the financial year 1926-27, which were published on February 19, may be regarded as satisfactory. Considering that Mr. Baldwin's Government is faced with a problem of cutting something like £100,000,000 off a Budget of £800,000,000, in order that the British Nation may have some sort of a chance of continuing as a business concern and making its income balance its expenditure, evidently Government expenditure has got to be diminished somewhere. And obviously the civilian mind in time of peace approves of cutting down expenditure on the King's Fighting Services. Consequently the hardest fight that these Services have at such a time is to extract enough money from the politicians to keep themselves in a proper state of preparedness for war.

The Estimates for 1926-27 (including Appropriations in Aid), show a gross total of £20,864,500 as against £21,319,310 for last year. Thus the net *decrease* is after all only £454,810.

The Net Estimates for 1926-27 (excluding Appropriations in Aid) are £16,000,000. The Net Estimates for last year were £15,513,010. The official document shows the difference as a net *increase* of £486,990.

Thus we have the two apparently contradictory positions that on the total Gross Estimates there is a net decrease of £454,810, while at the same time on the Net Estimates there is an increase of £486,990. Which only shows what can be done by a little political juggling with book-keeping.

From a purely personal point of view there is a certain grim satisfaction in discovering that the juggling has been done so nearly in the way indicated, purely as a shot in the dark, in this paper some few weeks ago.

Sir Samuel Hoare in his Chelsea speech virtually promised an increase in the Estimates. That is to say, he said that he had been able to avoid anything like the increase of 30 per cent. (some £5,000,000) which would have been incurred if the Cabinet had adhered to the programme of expansion laid down by successive Conservative and Labour Governments. Consequently we see that increase of £486,990 in the Net Estimates.

But it may be remembered that one made a guess that there would be a reduction in the Gross Estimates by cutting down the Appropriations in Aid. And so one finds the net decrease of £454,810. And thus everybody ought to be pleased.

The Navy's Aid.

The actual reductions in the Appropriations in Aid amount to £791,000. And, as one guessed, the chief reduction is in the amount which the Admiralty is to contribute towards the maintenance of the Fleet Air Arm. Under the circumstances it seems worth while to deal with this point first.

On Vote 1, Pay of the Air Force, the Admiralty grant of £130,000 last year has only been cut down by £8,000 to £122,000.

On Vote 2, Quartering and Stores, nothing has been cut. It is only £27,000 anyway.

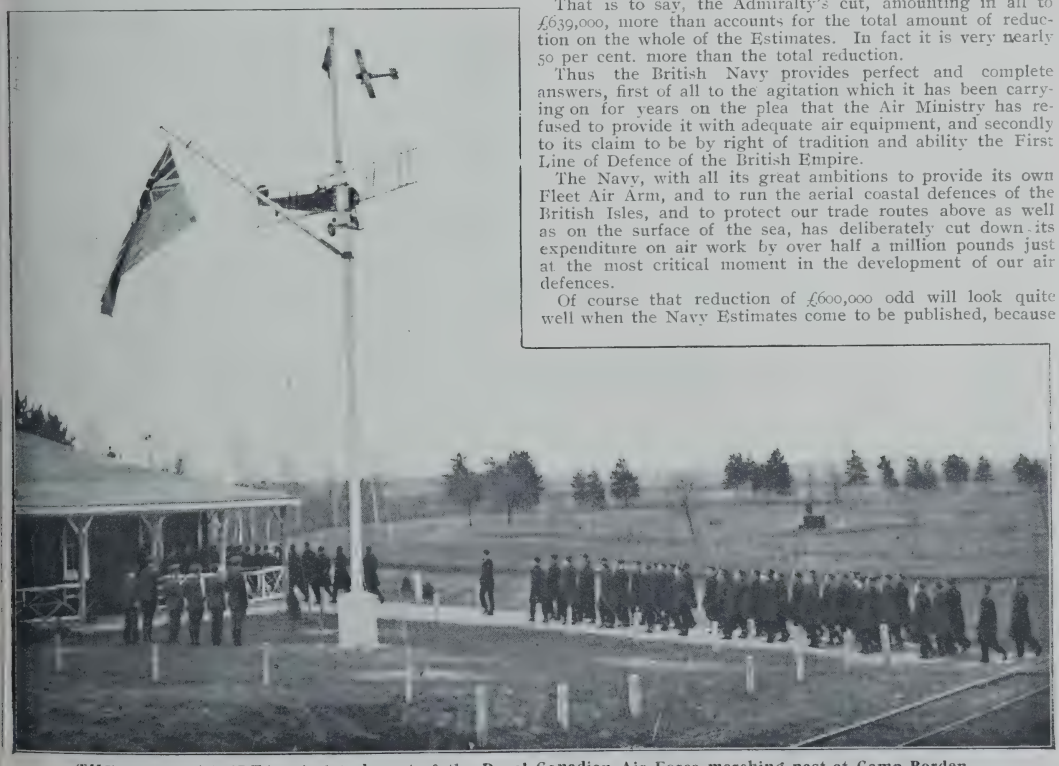
On Vote 3, Technical and Warlike Stores (including Experimental and Research Services), the Admiralty grant has been reduced from £1,163,000 to £532,000. Which shows a reduction of £631,000.

That is to say, the Admiralty's cut, amounting in all to £639,000, more than accounts for the total amount of reduction on the whole of the Estimates. In fact it is very nearly 50 per cent. more than the total reduction.

Thus the British Navy provides perfect and complete answers, first of all to the agitation which it has been carrying on for years on the plea that the Air Ministry has refused to provide it with adequate air equipment, and secondly to its claim to be by right of tradition and ability the First Line of Defence of the British Empire.

The Navy, with all its great ambitions to provide its own Fleet Air Arm, and to run the aerial coastal defences of the British Isles, and to protect our trade routes above as well as on the surface of the sea, has deliberately cut down its expenditure on air work by over half a million pounds just at the most critical moment in the development of our air defences.

Of course that reduction of £600,000 odd will look quite well when the Navy Estimates come to be published, because



THE IMPERIAL IDEA.—A detachment of the Royal Canadian Air Force marching past at Camp Borden.

it will look as if the Admiralty were bowing its head humbly to the demands of the Colwyn Committee for economy. But one finds it difficult to understand precisely why the Navy has made that reduction.

If the Navy, or at any rate that faction of which Sir Roger Keyes seems to be the moving spirit, still retains its ambition to wreck the Air Force and revive the Naval Air Service as a separate entity, one would have thought that it would have done its best to increase its Appropriation in Aid to the Air Ministry, if only by way of showing that it was resolved to save our aerial defences even by sacrificing something of its sea-going equipment. It may be that by reducing its Appropriation in Aid the Admiralty hopes to be able to set up at some future date another wail about the way in which its Fleet Air Arm is neglected by the Air Ministry.

But one has quite sufficient confidence in the astuteness of the Air Council to be fairly sure that the equipment of the Fleet Air Arm will be maintained at an adequate level, even though it may not be necessary in future to order an excessive number of sea-going aircraft as was done at one period in the past when the Air Ministry provided so many more aircraft than the Navy could possibly accommodate, on the good old principle of stopping a child from yelling by stuffing its mouth with food. At any rate if anybody feels inclined to raise any further agitation about reducing the aircraft equipment of the Royal Air Force their quarrel must be with the Admiralty and not with the Air Ministry.

India and Iraq.

Compared with the Admiralty's cut the other reductions in the Appropriations in Air are comparatively trivial.

The Middle East Appropriation for Technical and Warlike Stores, which was £1,092,000 for 1925, has been reduced to £978,000 for 1926, a reduction of £114,000, and the reduction in pay is only £17,400.

The Indian Government's Appropriation for Technical and Warlike Stores is £350,000 as against £400,000 last year, a reduction of £50,000. But on the other hand the Indian Government's Appropriation for Pay is £157,000 for 1926 as against £98,600 for 1925, a rise of £58,400. So the Air Force is slightly in pocket on the deal with India.

Sir Samuel Hoare's Memorandum.

In the Memorandum issued by the Secretary of State for Air accompanying the Air Estimates, Sir Samuel Hoare says :—

The decrease in the provision for the Middle East represents another stage in the progressive diminution of the British forces in Iraq and Palestine; its continuance depends on the absence of any serious setback to the political stabilisation of those countries. The decrease on the Fleet Air Arm is mainly due to the non-recurrence of capital expenditure on new equipment; there is to be no diminution of the strength of the Arm in the coming year, but on the other hand the further increase to which reference was made last year has been postponed by agreement with the Admiralty.

The increase on the net Estimates reflects the higher level of strength of the Home Defence Force; expansion has been proceeding during the current year, and although the actual development during the coming year will be less, the average requirements of this part of the Air Force over the year both in personnel and materiel are inevitably greater. But expenditure in this direction has been offset by all possible administrative economies, and the net total of some of the Votes shows a decrease.

While, however, the gradual growth of the Air Force for Home Defence continues, the actual rate of expansion is decreased. This is a consequence of a decision of His Majesty's Government to relax, in view of the international and financial situation, the efforts which have hitherto been made to complete the authorised programme at the first possible date.

When in 1923 the then Government decided to increase the strength of the Home Defence force to 52 squadrons (39 regular) it was contemplated that this could be achieved by the year 1928. It had already become apparent, however, that the very complicated interlocking programme of land purchase, building, recruiting, training and equipment could hardly be completed before the year 1930.

The effect of the recent decision is that in existing circumstances even this date need not be aimed at for completion of the programme and that the advances towards it, in the next year or two at any rate, can be gradual and deliberate. This decision—which relates only to the rate of progress, not to the strength to be eventually attained—is open to review in accordance with the international situation, and in particular with the results of international discussions on disarmament.

Apart from such contingencies, which are still in the future, the total of Air Estimates will necessarily rise considerably in future years. The slackening of the advance makes it possible to avoid in 1926 the substantial increase in expenditure which was impending, but the deferment is temporary.

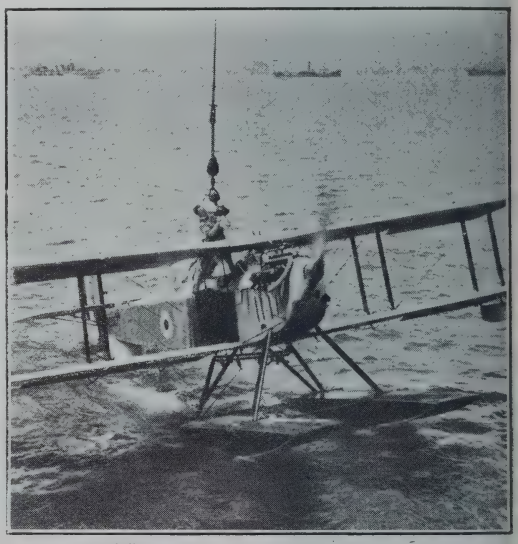
During the past year the strength of the Air Force has been increased by two Regular squadrons, one Special Reserve squadron and four Auxiliary Air Force squadrons, and, apart from training units and establishments, is at present approximately equivalent to 56 squadrons, 56 of which are maintained on a regular basis.

Of the regular units 45 are organised on a squadron basis (in addition to two detached flights) the remainder being composed of 11 flights (numerically equivalent to about 9 squadrons) provided for service in the Fleet Air Arm, and two flights controlled by the Air Ministry for operation from coastal bases.

The distribution on a squadron basis is as follows :—

	Regular Squadrons.	Regular Flights.	A.A.F. & S.R. Squadrons.
Home	27	1	5
Iraq	8	—	—
India	6	—	—
Egypt, Palestine, and Transjordan	4	—	—
Aden and Somaliland ...	—	1	—

The Home Defence Force now consists of 25 squadrons including



THE IMPERIAL IDEA.—A Fairey III.D (Napier), of the Fleet Air Arm, about to be slung on board a warship.



THE IMPERIAL IDEA.—Fairey Flycatchers (Bristol Jupiter engine), deck-fliers of the Fleet Air Arm, at Northolt Aerodrome.

6259 miles flight in record time

Spain to Buenos Aires on Napier Aero Engines

Major Franco, the Spanish airman, on his wonderful flight from Spain to Buenos Aires used a Dornier-Wal flying boat, built in Italy, and fitted with two Napier aero engines.

"IT is a high tribute to the products of the aircraft manufacturing industry in this country that the Napier engines have emerged from the ordeal without the pilot having experienced the slightest trouble. From the moment he set out, Major Franco has not found it necessary to change a single part, and there has been no more overhaul than the ordinary examination which is made of an air liner on the Continental airways after it has completed a cross-channel flight."

Westminster Gazette, 11.2.26.

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1 Special Reserve and 4 Auxiliary Air Force. Considerable progress has been made in the preliminary arrangements for the formation of two additional squadrons, one Special Reserve and one Auxiliary Air Force, and it is proposed to form these two squadrons in the financial year 1926.

The one new regular squadron which it is also proposed to add to the Home Defence Force during the year will, it is anticipated, become available by withdrawal from overseas.

The post of Air Officer Commanding Air Defences of Great Britain was instituted about a year ago with a small staff which has so far been engaged on preliminary work, the supervision of training, etc., with temporary Headquarters at the Air Ministry. During the forthcoming year it is proposed to advance a further stage and to place under this Command, which will shortly be moved from the Air Ministry, two new Headquarters which are to be formed for the control respectively of the Fighting and Bombing Squadrons of the Home Defence Force. One of these Headquarters will be in substitution for an existing Group.

The strength of the Fleet Air Arm remains at 18 flights, the increase of four flights which it was proposed to effect in 1925 having been postponed, in conformity with a deferment of the completion of the aircraft-carrier for which they will be required.

The provision of squadrons for co-operation with the Army remains unchanged.

Following upon the settlement by the League of Nations of the Northern Boundary of Iraq it is proposed to proceed with the scheme for the progressive reduction of the Imperial garrison in that country, provided that there are no untoward political developments.

Three squadrons continue to be maintained in Egypt, and a detached flight of three aircraft at Aden with one machine in reserve in Somaliland. One squadron is provided for Palestine and Transjordan, one flight of which is stationed in the former country and two flights allocated to Amman.

The effective use of aircraft in tribal control already demonstrated in Iraq, Transjordan and Somaliland, was further illustrated by the operations against the Mahsud on the North-West Frontier of India in March and April, 1925. The conspicuous success of these operations in which aircraft alone were employed has been recognised by the Government of India.

Aircraft have been employed within the last few weeks in a minor operation in the Nuba Mountains in the Soudan.

That gives quite a clear and concise summary of the whole situation. And on the whole it must be regarded as satisfactory, much as everybody would have liked to have seen the Air Ministry proceed with its original scheme of expansion. Sir Samuel Hoare and the Air Council deserve to be congratulated on having almost successfully resisted the strenuous efforts which have been made to weaken still further our First Line of Defence.

We may now proceed to investigate the Estimates somewhat further.

Personnel and Pay.

On Vote A, which is for the maximum number of officers and men in the Air Force, exclusive of those serving in India, there is a reduction of 500 men. But one imagines that these 500 are more than covered by the increase in the Indian Appropriation in Aid for Personnel.

On Vote 1, Pay, etc., of the Air Force, there is a net decrease of £7,000.

The detailed account shows that there is a decrease of £94,700 in the Pay and Allowances of officers, a decrease of £17,000 in Marriage Allowances, and a decrease of £6,700 in Recruiting Staff.

On the other hand there are increases of £54,600 in the Pay and Allowances of Airmen, £67,700 in the Pay of Civilia and £18,500 in Discharge Gratuities to Airmen.

Further details show that there is to be one Air Vice Marsh more this year, but two Air Commodores less. There is c Group Captain less but six Wing Commanders more. Th are four extra Squadron Leaders, 16 less Flight Lieutenan 134 less Flying Officers and 14 more Pilot Officers.

As these are exclusive of those serving in India it is possi that the increase in the Indian Establishment may be m than maintaining last year's strength.

The Civilians include such people as the clerks and fo men at the Stores Depot at Kidbrooke and the Ammuniti Depot at Altrincham and the Stores at Milton and Ruislip a the Packing Depot at Ascot, and clerks to our Air Attac in Paris, Washington, Rome and Buenos Aires. A new a pointment in this branch is apparently a store-keeper at Ho Kong who gets £620 per annum.

Vote 2, Quartering, Non-Technical Stores, etc., shows increase of £48,000. There is nothing much in this Vote whi calls for comment beyond the sad news that there is a duction of £1,000 in the pay of personnel employed in t Royal Air Force laundries. One hopes that the Air Force not intended to be less cleanly owing to the Air Ministry effort to help to pay for the coal subsidy.

Also one learns that the Air Force is saving £9,000 on horses and forage, the expenditure this year being o £30,000. One hopes that the livers of field officers will r suffer owing to a reduction of horse exercise.

The Foundations of the Air Force.

Vote 3, Technical and Warlike Stores (including Expe mental and Research Services), is naturally the section the Estimates which is of the greatest interest, not only the British Aircraft Industry but to all those who realise t no matter how efficient the personnel may be the Air Fo must be properly equipped with the most modern and effici aircraft.

The total vote for this materiel in 1925 was £8,881,000. cording to the official document it has been estimated t £300,000 of this amount has not been spent.

This is interesting in view of the fact that everybody w under the impression that last year's Vote had been ov spent. And it makes all the more unjust the position of c tain manufacturers who having built aircraft on the streng of official people's promises from the Supply Department the Air Ministry have had these machines left on their han because those responsible would not pass contracts for the

Deducting this £300,000, the actual amount spent in 1925 was £8,581,000. The Vote for 1926-27 is £8,231,000. T means an actual decrease in the amount to be spent £650,000.

But these figures include the Appropriations in Aid whi including all the minor sources of revenue, amounted £2,931,000 last year, whereas this year they are only to £2,140,000. Which is a decrease of £791,000.

When those Appropriations in Aid are deducted from t total amounts you then get the actual amount of mon which the Air Ministry itself is spending on Technical a Warlike Stores. The necessary arithmetic shows that t



THE IMPERIAL IDEA.

THE FIRST D.H. MOTH FOR TH ROYAL AUSTRALIAN AIR FORCE

This photograph was taken at St Lane aerodrome, and shows Brigadi General Dodds, C.M.G., C.V.O., D.S. the Military Representative of t Australian Government, seated in t machine, Sq. Ldr. R. S. Brown, A.F. R.A.A.F., the Australian Air Liais Officer, at the Air Ministry, in t centre, and Major Milford, D.S.O., t Assistant Military Representative of t Australian Government, on the left.

In the middle of December, when t machine was almost in the raw state, definite hour on Jan. 14 was fixed the acceptance flight, and appointme were made for these officers to present. Everything went off acco ing to programme.

This machine, with one other, is be used in the R.A.A.F. to investig its possibilities as a training machi In all, nine Moths, with A.D.C.-Cir engines, have been supplied to t Australian Government for military a civil use.


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Air Ministry's expenditure on its own account last year was £5,650,000, whereas this year it will be £6,091,000.

Consequently the casual observer, glancing at the first page of Vote 3, on which the expenditure is shown under general headings, finds that there is a net increase of £441,000. That of course is very consoling to those who do not take the trouble to dive into the figures and find that actually there is a decrease of £650,000, as already stated.

That being that, we may now look at some of the detail figures.

New Aircraft.

The amount allocated for complete machines in 1926 is £2,888,000 as against £2,908,000 last year. There is thus a decrease of only £20,000, which represents the price of one big bomber or something of that sort.

As a matter of fact if the Supply and Research Department set to work seriously to develop the construction of aircraft along lines of modern thought they could get very many more machines for very much less money. The most up-to-date aeroplane constructed according to the ideas of the Air Ministry experts is about as much like a modern aeroplane ought to be as Nelson's wooden battleships were like the steel warships of to-day.

It is quite time that we had a complete revolution in the construction of aircraft. There is hardly a designer in this country who could not simplify and cheapen methods of construction and thus reduce the price of each individual machine while at the same time increasing the output of the factory in which he is employed and showing a bigger profit to the owners of the factory.

In spite of that trivial reduction of £20,000 the Air Force could have a great many more aeroplanes and the British Aircraft Industry could make a very much bigger profit if only designers were allowed to exercise their ingenuity instead of being held down to out-of-date methods of construction by the Air Ministry's experts.

Engines.

The next article of equipment in the list is engines. Here the amount to be expended in 1926 is £1,031,000 as against £1,537,000 in 1925. The reduction, as may be seen, is £506,000.

Whether this means actually a smaller number of engines for the Air Force or whether it means an equal number of cheaper engines, only the Supply Department of the Air Ministry itself can know. The prices of British engines are not unreasonable considering the workmanship and material that is put into them. But here again it is possible that by simplification of design and improved methods of construction prices may be reduced.

It is possible that the types of engines which have been definitely standardised may be cheaper to buy in future owing to the fact that the design costs and experimental costs affecting those engines have probably been carried by the prices which have been charged for them since they were produced. But there is the difficulty that if engine designs are to make progress the cost of developing and experimenting with new types must be borne by the price of standardised types unless the Air Ministry is prepared to pay for the cost of developing the new types.

As against these reductions there is a rise of £54,000 in the allotment for aeroplane spares, parachutes and miscellaneous. Presumably most of this amount will be spent on parachutes.

Engine spares, on the other hand, show a reduction of £41,000. This may be taken as testimony to the reliability of British engines. In spite of the vast increase in the amount of flying which is being done by the R.A.F., although certain prejudiced newspapers would have us believe that less flying is done than should be, British engines are now so reliable that undoubtedly a smaller number of spare parts are necessary.

All told there is a decrease of £513,000 on aeroplanes, seaplanes, engines and spares.

Experiment and Research.

Section B of Vote 3, Experimental and Research Establishments, shows an increase of £31,500. The most important factor in this amount is the Royal Aircraft Establishment at Farnborough, which is to absorb £385,700 this year as against £438,000 last year, a reduction of £54,300. One cannot help thinking that if the total allotment has been £54,000 odd instead of £385,700 this country might get better value for its money.

By an effort of Government book-keeping a sum of £355,700 is deducted for "cash expenditure on experimental and research work, for which provision is made under sub-heads A, D, E, F and G," so that the total expenditure on the Royal Aircraft Establishment at Farnborough stands in the Ministry's books at a mere paltry £30,000 out of the total expenditure of £95,000.

That cash expenditure represents aeroplanes, engines, instruments, photographic equipment, armament, ammunition, wireless equipment, metal construction, accessories, etc., bought from the R.A.E. by the R.A.F. One wishes that somebody would tell the World what the R.A.F. really gets for that £355,700.

The Airworthiness Department, Contracts Technical Supervision Department and Technical Publications Department, which really do quite good work, only cost £28,700. The specialists at Martlesham, apart from the R.A.F. Personnel, only cost £2,153. Similar specialists at Felixstowe only cost £1,406. The Air Ministry Laboratory at South Kensington, of whose activities one is blissfully ignorant, costs £4,561.

All told, barring the R.A.E. at Farnborough, the Air Ministry seems to get very good value for its money.

The A.I.D.

Another charge on Technical and Warlike Stores is the Aeronautical Inspection Department. This costs £132,000 all told, an increase of £7,500 over last year. And it seems to be distinctly cheap at the price.

The salaries of the higher officials of the Department are shown in Vote 10, Air Ministry. They seem to be remarkably badly paid for the work they do and the responsibility which they have to take.

The following sections of Vote 3 cover such things as Instruments, Armament, Electrical Gadgets, Mechanical Transport and so forth, and call for no particular comment.

Section L, for Petrol and Oil, shows an increase of £38,000. That means more flying and consequent higher efficiency among Air Force pilots, gunners and bombers. Again in spite of prejudiced critics, the Air Force is doing more and more flying every year and is training more and more pilots. So the £496,000 allocated for engine-fodder will be well spent.

Section M is a sum of £57,000 estimated for rewards to inventors and miscellaneous claims. This is a reduction of £500 on last year and probably last year's sum accounts for some of the £300,000 which was not spent.

Airships.

Section N, Purchase of Airships, is estimated at £30,000, which is half last year's Estimate. It strikes one that only a very small section of an airship could be purchased for £30,000.

Section O, Airship Developments, includes the whole of the Royal Airship Works at Cardington, which, taking in all the pay (from one director at £1,750 to six shorthand typists at £750 for the lot) and including alterations to the airship shed, the new mooring mast and everything else, runs up to £222,200, a drop of £70,300 on last year.

Among the economies effected is one "comptometer operator" who was paid £125 last year and ceases to exist this year. One is sorry about him. He must have been the only one of his species in the employ of the Air Ministry. And one is not surprised that he ceased to exist on £125 per annum.

Incidentally the total estimate for the alterations to the airship shed are £985,000 of which only £8,500 is voted for 1926. The new mooring mast is estimated to cost £50,000. Of that £45,000 will be spent by the end of March and the remaining £5,000 will be spent during 1926.

Among other matters of interest in this section one learns that the mooring mast in Egypt will cost £53,000, that the airship shed in India will cost £172,000, and that the Indian mooring mast will also cost £53,000. But only small portions of these sums will be expended in 1926.

Under Vote 3 the Appropriations in Aid to which reference has already been made appear as Section P. The figures for these have already been noted earlier in this article.

Works and Buildings.

Vote 4, Works, Buildings and Lands, show a net decrease of £225,000.

The staff is reduced by £22,000. New works, additions and alterations, amounting to £2,000 each or more, run up to £1,790,000, a reduction of £16,000. Minor works under £2,000 amount to £113,000, which is an increase of £19,500. Purchases of lands and buildings are reduced by £260,000 and amount only to £140,000.

From the detailed statements some rather interesting information is to be gathered. £45,000 altogether is to be spent on the Ammunition Depot at Altrincham. £5,000 is to be spent this year on the Staff College mess at Andover—and it needs it and deserves it. £233,000 is to be spent on the construction of an R.A.F. Station at Bicester, of which £76,000 is voted for 1926.

The Cambridge University Air Unit is to be accommodated at a cost of £3,450. £30,000 is to be spent on accommodating an Auxiliary Air Force Squadron at Castle Bromwich. £80,000 is to be spent on making Catterick fit for human habitation. £12,000 is to be spent on accommodating civilian instructors at Cranwell—luxurious persons. £56,000 is to be spent on making Digby habitable. £39,200 is to be spent on accommodating the experimental people at Felixstowe.

Filton is to have £137,000 spent on it. Gosport will absorb

The London-Cape Town Imperial Airway Survey Flight



WAKEFIELD Castrol MOTOR OIL

was used throughout this great flight to lubricate the ARMSTRONG-SIDDELEY "JAGUAR" ENGINE.

Mr. Alan Cobham cables: "CONGRATULATIONS ON YOUR WONDERFUL CASTROL R OIL WHICH HAS LUBRICATED MY AIR COOLED SIDDELEY ENGINE SO SUCCESSFULLY ON OUR FLIGHT FROM LONDON THROUGH TROPICAL AFRICA TO CAPE TOWN.—ALAN COBHAM."

The same famous lubricant was also used throughout the aerial survey flight of Sir Sefton Brancker and Mr. Cobham to Rangoon and back last winter, in the recent trans-Atlantic flight of Commandante Franco, in the first trans-Atlantic flight by Sir John Alcock—in fact in almost every great feat of aerial endurance and reliability the lubricant chosen was Wakefield CASTROL—the product of an all-British Firm.

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£56,000. Roughly £450,000 will be spent on Halton, and more than half of it has already been spent.

Martlesham Heath, which was very nearly abandoned a few years ago, is to have £167,000 spent on it. The new Home Defence Station at North Weald, which was quite a good station even seven years ago, is to cost £239,000. Spittlegate is to be reconstructed at a cost of £168,000. Sutton's Farm is to cost £247,000. Tangmere, which was quite habitable a few years ago, is to cost £179,000. Upper Heyford, which is near Oxford, is to cost £395,000.

After which such small things as £167,000 for new barrack blocks at Uxbridge, £183,000 for alterations at Wittering and £156,000 for Worthy Down are hardly worth considering.

Would-be humorists or critics will doubtless seize on these figures and make great play with japes about "The Royal Ground Force." But as a matter of fact all this expenditure is thoroughly justified, for if a man is going to fly properly he must be housed properly. One cannot expect a pilot to fly or a mechanic to keep a machine in flying order if he has to live in leaky wartime huts.

Also, somebody seems to be attending to the morals of the establishment, for £920,000 is allocated for quarters for married airmen and £410,000 for quarters for married officers.

Of all these sums about £800,000 has already been spent and the 1926 Estimates only have to carry £310,000.

Our anxiety to evacuate Egypt is shown by the fact that about £500,000 is allocated to various works in Egypt which are necessary for the efficient operation of aircraft in that area.

On the other hand, only a matter of £25,000 is allocated to works in Iraq, but about £250,000 is to be spent in Palestine.

MEDICAL AND EDUCATIONAL.

Vote 5, for Medical Services, shows a gross total of £347,500, which is a decrease of £8,000 on last year. But as the Appropriations in Aid are reduced there is a net increase to the Air Ministry itself of £5,000.

Educational Services, which include the R.A.F. Staff College, the Cadet College at Cranwell, the School of Technical Training at Halton and General and Vocational Training, come to a total of £448,000, which is £55,000 less than last year.

There is a saving of a little over £500 by having an Air Commodore as Commandant at the Staff College instead of an Air Vice-Marshal. Cranwell is to cost £164,700 instead of £185,500. Halton is to cost £219,100 instead of £256,500. General and Vocational Training of Airmen is to cost £46,700 as against £44,100.

THE RESERVES.

Vote 7 is for Auxiliary and Reserve Forces. The total shown for these is £406,500 as against £349,000 last year. In relation to this vote Sir Samuel Hoare in his Memorandum says :—

The development of the Reserve and Auxiliary Forces and of the two University "Air squadrons" described below, is to be continued during 1926 and Vote 7 is accordingly increased by £58,000. The re-equipment of the civil flying schools with aircraft of modern type for the training of Reserve Officers is progressing and the higher cost of this training is reflected in the provision.

Now that the supplementary source of recruitment for the Reserve of Air Force Officers from amongst qualified pilots trained during the late war is practically exhausted, an experimental scheme has been launched for the enrolment of young men, and their training *ab initio* as pilots, in the Reserve. Provision is taken for continuing this scheme on a small scale during 1926.

A beginning has been made with the formation of Special Reserve and Auxiliary Air Force squadrons, and these squadrons will, as already mentioned, be further developed during the year. The intake of volunteers in the squadrons already formed varies considerably in the different localities, and the estimate under this head is consequently still somewhat tentative in character.

During the latter part of 1925 provision was made at the Universities of Oxford and Cambridge to enable members of those Universities to obtain knowledge and experience of all matters connected with aviation. Although the term "Air Squadron" has been adopted for convenience of use, no unit organisation has been introduced and all instruction is given individually in the form of courses which are both practical and theoretical.

The object of these courses is to influence the flow of candidates for commissions in the R.A.F., the Air Force Reserve and the Auxiliary Air Force, to stimulate interest in air matters generally at the Universities, and to promote and maintain a liaison with the Universities in technical and research problems affecting aviation.

Except in so far as the qualifications of members, independent of their connection with the "Air squadrons" render them eligible and willing to enrol in one or other of the non-regular Forces, they will have no liability for Air Force service.

In each "squadron" there is a Chief Instructor, who is, at Oxford, a professor of the University, and at Cambridge, a Wing Commander of the Regular Air Force. In addition a regular officer and two airmen are attached to assist in the instruction of the members. The provision taken in Vote 7 for the two "squadrons" (pay, etc., of instructors and miscellaneous expenses) approximate to £4,000.

Next week one proposes to deal with Vote 8, which has to do with Civil Aviation; Vote 9, Meteorological and Miscellaneous Services, and Vote 10, which is the Vote for the Air Ministry itself.

(To be continued.)

SIR PHILIP SASSOON IN BRUSSELS.

The Brussels correspondent of *The Times*, in a communication dated Feb. 21, states :—

Sir Philip Sassoon, Under-Secretary for Air, yesterday lectured before the Belgian Aero Club. His audience included the King of the Belgians, the British and Italian Ambassadors, Polish Minister, M. Carton, Minister of the Colonies, and numerous officers and political personages.

The lecturer spoke in French, and his address was illustrated by lantern slides. He referred to Great Britain's sincere desire to collaborate in the reduction of armaments. He said that the number of British military aeroplanes, which stood at 22,170 in 1918, fell to 7,113 in 1920, to 5,174 in 1925, and would not exceed 2,424 in the present year. "We hoped," continued Sir Philip, "that, like us, other nations would reduce the number of their military aeroplanes; but our hope has failed." That Great Britain was an island was more of a danger than a protection in the event of aerial warfare.

In regard to the assistance rendered by aviation in oversea territories, the lecturer said that in the course of a disturbance in Iraq aeroplanes had transported 300 men and 30,000 cartridges to the area in question in eight hours, whereas a move by other means of transport would have taken 4½ days. Sir Philip ended by reiterating the British desire for peace.

The address was warmly received, the appreciation of the audience being conveyed in a speech of thanks by M. Jacobs, president of the Belgian Aero Club. After the address the King had a long conversation with Sir Philip Sassoon.

THE BRITANNIA TROPHY.

The following has been issued officially by the Royal Aero Club :—

Britannia Trophy.—It was unanimously decided to award the Britannia Trophy for the year 1925 to Mr. A. J. Cobham, whose flight with Air Vice-Marshal Sir Sefton Brancker from London to India and back was considered the most meritorious performance in the air by a British Aviator during the year. Mr. Cobham left London on Nov. 20, 1924, and arrived back on Mar. 17, 1925. The machine was a D.H.50, with 250 h.p. Siddeley Puma engine.

It will be noted that the Royal Aero Club officials completely ignore the presence of Mr. A. B. Elliott, the engineer in charge of the flight, whom some regard as the most important member of the trio in that he kept the single Puma engine in perfect condition throughout the whole route. Furthermore, the flight was from London to Rangoon in Burma, which is a good deal further than that somewhat wide expanse of territory called India. Also the flight between India and Burma has not been done so often as the flight between England and India. One has heard the Puma rated at 230 h.p. and 240 h.p., but this is the first occasion on which one has heard it called officially 250 h.p.

DECIDED BY PERFORMANCE.

For some time past it has been uncertain whether Jupiter or Jaguar engines would be installed in the new D.H.66s for Imperial Airways Ltd. The Bristol Company, therefore, to show the faith in their latest Jupiter, installed it in a Bristol Bloodhound, and from Jan. 4 it has been flying steadily at Croydon.

A fortnight ago it completed 100 hrs. and last week it completed 150 hours. At the moment of writing it has done 171 hrs. The average petrol consumption has been under 22 gallons per hour and there have been no replacements of any kind.

Therefore it is not surprising to hear that it has been decided to fit the Bristol Jupiter into the D.H.66. This means presumably an order of 20 engines, fifteen for the five machines and five spares.

In view of the wonderful successes of the Jupiter abroad on top of this performance, the Bristol Company and Mr. Roy Fedden, the designer, deserve congratulations. And Imperial Airways deserve congratulation on their prudent selection.

GOOD WORK.

The following are details concerning the performance put up by the Queensland and Northern Territory Aerial Service Ltd. (Quantas), which, on Nov. 2, 1925, entered into its fourth year as aerial mail contractors on the 825-mile Charleville-Camooweal route.

During the above period the Quantas have established a record which is of great interest to all users of the spirit which moves its aerial traffic, which is naturally "Shell" aviation spirit.

Briefly, the record is as under :—

Total mileage flown	303,477
All-round efficiency	100%
Injury to passengers or personnel	Nil.
Surcharge letters carried	42,557
Paying passengers	2,112
Freight (excluding passengers' luggage)	20,452 lbs.
Hours flown	2,620

The above figures do not include taxi flights off the main route, some of which exceed 1,000 miles in length.

The general increase in 1925 performance over that of 1924 was as follows :—Route passengers, 72%; Taxi Passengers, 86%; Mails, 100%; freights, 130%.

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The first Direct Flight across the Atlantic June 14th 15th 1919.
Left St John's, Newfoundland, 4 28 p.m G.M.T Reached Irish Coast, near Clifden, 8.25 a.m G.M.T.



The first and only Aeroplane to fly from Great Britain to Australia.
27 days 21 hours. Nov. 12th - Dec. 10th, 1919.



The first Aeroplane to fly from London to Central Africa (*Tabora*)
Jan. 24th - Feb. 27th 1920.



The first Aeroplane to fly from Cairo to South Africa (*Bulawayo*).
Feb. 22nd:-March 5th 1920.

The supreme standards of excellence of design and construction which made those flights possible are most rigorously upheld and maintained throughout the whole present day range of

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THE ROYAL AIR FORCE.

The London Gazette

Feb. 16.

General Duties Branch.—Flt. Lt. M. C. Dick is granted a perm. comn. in the rank stated (Jan. 1).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—H. T. Messenger (Sept. 3, 1925); N. A. West (Oct. 15, 1925); W. O. Duport (Jan. 31), J. E. Davies (Feb. 8); M. H. Jenks (Capt., Glos. Regt., R.A.R.O.) (Feb. 8).

Flg. Off. H. J. M. Berthon (Sub.-Lt., R.N., retd.) resigns his S.S. comn. (Feb. 17); Flg. Off. E. C. Moon relinquishes his S.S. comn. on account of ill-health (Feb. 17). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—J. N. Goodwyn (Feb. 3); D. C. Field (Feb. 17).

Stores Branch.—Flg. Off. J. F. Young, M.M., is confirmed in his appointment in the Stores Branch and is granted a perm. comn. in the rank stated (Feb. 17).

Medical Branch.—E. J. Jenkins is granted a S.S. comn. as a Flg. Off. for three years on the Active List, with effect from and with seniority of Feb. 1, Temp. Lt. H. R. Peck, General List, Dental Surgeon, Army, is granted a temp. comn. as Flg. Off. on attachment to the R.A.F. (Feb. 1). He will continue to receive emoluments from Army funds.

Chaplains' Branch.—The Rev. G. A. Davies, M.A., is granted a perm. comn. with the relative rank of Sq. Ldr. (Jan. 31).

Reserve of Air Force Officers.—Plt. Off. A. Smith resigns his comn. (Jan. 15): Flg. Off. P. T. Hubbard is transferred from Class A to Class C (Feb. 16).

Feb. 19.

General Duties Branch.—The following Plt. Offs. on probation are confirmed in rank:—R. Connor, E. J. George, S. J. Gilbert, J. D. Greaves, P. E. Grenfell, F. W. H. Hall, A. V. Harvey, A. E. Hill, F. S. Hodder, G. H. C. Ingle, W. T. Jones, H. J. F. Kempthorne, J. C. Lewis, T. K. Merrett, S. F. Prince, J. W. Stokes, D. S. Thomas, G. H. Walker, R. A. Wills, F. G. S. Wilson, J. N. Young (Jan. 18), N. S. Little (Jan. 30).

Appointments.

Week ending Feb. 22.

General Duties Branch.—Wing Commander A. H. S. Steele-Perkins, O.B.E., to H.Q., Inland Area, for Personnel Staff duties, 21/2.

Squadron Leaders E. R. Pretyman, A.F.C., to H.Q., Coastal Area, 9/2. F. Sowrey, D.S.O., M.C., A.F.C., to No. 41 Sqdn., Northolt, 29/1.

Flight Lieutenants G. R. Oliver, to No. 1 Group H.Q., Kidbrooke, 8/2. C. Hallawell, to Arm. and Gunnery School, Eastchurch, 8/2. R. J. H. Holland, to C.F.S., Upavon, 21/1. J. B. P. Angel, to Aircraft Park, India, 12/2. R. Harrison, D.F.C., to No. 30 Sqdn., Iraq, 12/2. S. F. Vincent, A.F.C., to No. 2 Arm. Car Coy., Palestine, 27/1. H. D. O'Neill, A.F.C., to Aircraft Depot, India, 12/2. T. S. Horry, D.F.C., to Aircraft Depot, Iraq, 12/2. D. R. W. Thompson, to E. and W. School, Flowerdown, 19/2. R. J. Divers, M.B.E., to R.A.F. Depot on transfer to Home Estab., 12/2. E. Brewerton, D.F.C., to No. 440 Flight, Mediterranean, 6/2.

Flying Officers F. H. Astle, to Station H.Q., Spittlegate, 22/2. B. Cheesman, M.B.E., to E.R.D., Egypt, 6/2. A. L. Pearce, to R.A.F. Depot on transfer to Home Estab., 12/1. H. Ford, D.F.C., to R.A.F. Depot, 9/2. C. G. Hancock, to R.A.F. Base, Gosport, 26/2. W. R. Heywood, to School of Naval Co-operation, Lee-on-Solent, 19/2. T. H. J. Wright, to No. 2 Sqdn., Manston, 15/2. W. H. O. Rumfitt, to No. 7 Sqdn., Bircham Newton, 15/2. M. Kortright, to No. 13 Sqdn., Andover, 15/2. H. M. Whittle, to No. 502 Ulster Sqdn., Aldergrove, 15/2. S. C. Black, M.M., to No. 84 Sqdn., Iraq, 12/2. R. B. Jordan, to No. 31 Sqdn., India, 12/2. J. J. Nolan, to No. 6 Sqdn., Iraq, 12/2. R. Melbourne, to No. 8 Sqdn., Iraq, 12/2. G. W. R. Russell, to No. 20 Sqdn., India, 12/2.

Pilot Officers E. B. C. Groner, to Aircraft Depot, Iraq, 12/2. W. F. Rimmer, to No. 55 Sqdn., Iraq, 12/2. B. A. C. Danbury, to No. 8 Sqdn., Iraq, 12/2. B. W. Knox, to No. 30 Sqdn., Iraq, 12/2. E. L. S. Ward, to Aircraft Depot, India, 12/2. C. J. Pavia, to No. 502 Ulster Sqdn., Aldergrove, 15/2. J. H. Barringer and C. Heard-White, to No. 207 Sqdn., Eastchurch, 15/2. J. S. Blomfield, F. Sisson and C. J. Veevers, to No. 2 Sqdn., Manston, 15/2. D. W. Gibbon, to No. 9 Sqdn., Manston, 15/2. V. T. Norwood, to No. 13 Sqdn., Andover, 15/2. A. L. R. Page, L. T. Pankhurst, S. C. Parker, E. G. H. Russell-Stracey and W. R. J. Spittle, to No. 16 Sqdn., Old Sarum, 15/2. P. B. Tomkins, to No. 39 Sqdn., Spittlegate, 15/2. P. V. Williams, to No. 7 Sqdn., Bircham Newton, 15/2. S. B. Flood, to No. 2 F.T.S., Digby, on transfer to Home Estab., 22/1.

Medical Branch.—Flying Officers G. M. Anderson, M.B., to No. 58 Sqdn., Worthy Down, 4/2. E. J. Jenkins, to R.A.F. Depot, 22/2. A. A. Townsend, M.B., to R.A.F. Depot on transfer to Home Estab., 12/1.

Stores Branch.—Squadron Leaders V. J. B. Jacobs, to H.Q., Egypt, 13/2. W. Millett, to Air Ministry, 16/2. Flight Lieutenant D. Mitchell, to S.D., Iraq, 27/1. Flying Officers A. McC. Goddard, to A.D., Iraq, 27/1. P. H. Wynne-Burt, to H.Q., Iraq, 12/2. J. G. Smithson, to No. 3 S.D., Milton, 9/2. P. Alderson, to remain at No. 1 S.D., Kidbrooke.

Accountant Branch.—Squadron Leader H. F. Fuller, to R.A.F. Depot, 1/3. Flying Officer R. W. L. Glenn, to No. 84 Sqdn., Iraq, 12/2.

Fatal Accidents.

The Air Ministry regrets to announce that as a result of an accident to a Bristol Fighter at Heliopolis, Egypt, on Feb. 6, Flg. Off. Arthur Cleverton Tremellen, the pilot of the aircraft, was killed, and Flt. Lt. Sturley Philip Simpson was seriously injured.

The Air Ministry regrets to announce that as a result of an accident at Nobat Dakin, South Arabia, to a Bristol Fighter of the Aden Flight, on Feb. 19, Flt. Lt. Eric Barnes Mason, the pilot of the aircraft, and No. 350081 AC.1. Jack Gwynne Cole, were killed.

R.A.F. SPORTS AND PASTIMES.

Fixtures for March.

Mar. 3.—Hockey: R. N. v. R.A.F.

Mar. 6.—Rugby: R.N v. Army, at Twickenham.

Mar. 10 and 11.—Boxing: R.A.F. Individual Championships, at Halton.

Mar. 17.—Association: R.A.F. v. Civil Service, Chiswick.

Mar. 18.—Rugby: R.A.F. v. Gloucester, at Gloucester.

Mar. 19.—Rugby: R.A.F. Rugby Cup Final.

Mar. 24.—Association: R.A.F. v. R.N., at Portsmouth; Fencing R.A.F. v. R.M.A., at Uxbridge; Racquets: R.A.F. v. R.M.C., at Sandhurst.

Mar. 27.—Rugby: Army v. R.A.F., at Twickenham.

Mar. 31.—Golf: Army v. R.A.F., at Camberley Heath.

Rugby in Iraq.

R.A.F. v. Army:—A Special Correspondent of *The Baghdad Times* of Feb. 9 writes:—

A great season's Rugger at Hinaidi culminated on Feb. 6, when two well-trained fifteens, representing their respective Services, met on 45 Sqdn. ground. There were fully 3,000 spectators, including his Excellency the Acting High Commissioner and the A.O.C. It was a great scene, reminiscent of Twickenham at its best, with the same troublesome cross-wind; and the game, hard and clean, was worth travelling many miles to see.

The R.A.F. won by 1 goal and 5 tries (20 points) to nil. They played like a team inspired, but at no period of the game did the Army slacken in their efforts; indeed their tackling was one of the features of the match, and they went down gallantly, contesting every inch of the ground to the final whistle.

The Army forwards were splendidly led by Lieut. Tisdall; in the loose they were magnificent; it was a thousand pities that their heeling from the scrum was so greatly at fault. This made it a tremendously difficult afternoon for Pte. Ferris, whose service was thereby handicapped, and players of the calibre of Lieut. Heyman and Pte. Wiseman had few opportunities in attack, although their defence was excellent. Pte. Callaghan, at full-back, rendered yeoman service his long touch-finding and coolness under pressure being worthy of great praise.

The Air Force forwards shone in the loose, and their heeling was well-nigh perfect. Flg. Offs. Sinclair, Stewart and Davey were ever in the thick of the fray, and L-AC. Collins as wing forward was a constant source of anxiety to the Army.

Flt. Lt. Sugden worked the scrum to perfection, and his stand-off half, Flg. Off. Forster, taking the ball at full speed and showing great skill in drawing the defence, time and again sent his "threes" off.

Padre Stephens gave a great exhibition of Rugby attack, and proved a tower of strength. His wing, L-AC. Morrison, had a field day, and his two tries were the result of powerful running aided by a most deceptive swerve.

In his letter which enclosed the above cutting a correspondent of The Aeroplane writes:—"Rugger has been flourishing this season. About 10 R.A.F. Units have been running teams. Mosul bought a team down and played three matches in Hinaidi. Recently Basra took a team to Abadan and beat the Anglo-Persian Oil Co. by 15 points to 8."

Association Football.

R.A.F. v. Norfolk:—On Feb. 17, at King's Lynn, the R.A.F. beat Norfolk County by 4 goals to 2.

Although the weather was comparatively fine the previous period of rain had left the ground rather greasy. Nevertheless a very pleasant and full-out game was witnessed by about 2,000 spectators.

The R.A.F. made four changes from the team which was beaten by the Corinthians, the most important being AC. Moran for Flg. Off. Hadley in goal and AC. Bangey from Cranwell as partner to Flt. Sjt. Fretwell at back. Both these new players played very well and should they line up to first impressions should prove valuable acquisitions to the team.

For the first ten minutes Norfolk did most of the attacking, but once the Air Force forwards settled down the game became very even. AC. Smith opened the scoring from a pass by AC. Kirk. Norfolk equalising with a shot which the goalkeeper had well covered when it was suddenly deflected off the legs of one of the Air Force backs into the goal. Just before half-time the Air Force took the lead from a penalty kick taken by F-S. Fretwell, one of the Norfolk defenders, the goalkeeper being out of goal, having fisted out a good shot from Blythe.

Soon after half-time the Air Force were awarded a second penalty which, although stopped by the goalkeeper at the first attempt, was netted by AC. Smith from the rebound.

After a lengthy period of even play the Norfolk attack were rewarded by a second goal, but their effort to effect a draw was speedily retarded by a fine individual goal scored by AC. Kirk who, dribbling a considerable distance, drew the goalkeeper to the right-hand side of the goal carefully depositing the ball into the left.

As one who has witnessed all the matches during the season at the R.A.F. one cannot conclude without a reference to the R.A.F. Station, Bircham Newton, the personnel of which, together with their wives and friends, turned out in great strength to support the Air Force, similar keeness at other Units would undoubtedly work wonders for the good of Association Football in the Service.—B. The team was:—

AC. Moran (Henlow), AC. Bangey (Cranwell), F-S. Fretwell (Hawkinge), Cpl. Cudlip (Old Sarum), Flg. Off. Dickson (Cranwell), Captain, L-AC. Underhill (Andover), AC. Blythe (Uxbridge), AC. Bishop (Henlow), AC. Kirk (Bircham Newton), AC. Smith (Martlesham Heath), AC Morris (Halton).

THE FIRST AEROPLANE TO FLY FROM LONDON TO CAPE TOWN.

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On Wednesday, February 17th, Mr. Alan J. Cobham, flying a D.H. Type 50.J Aeroplane arrived at Cape Town having flown from London, 8,020 miles in 94 flying hours.

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Boxing.

The R.A.F. Individual Championships (Boxing) will be held at Halton on Mar. 10 and 11. All those concerned are reminded that entries must reach the Secretary of the R.A.F. Boxing Association by the first post on Mar. 3.

Boxing in Iraq.

A team boxing championship meeting was held at Hinaidi on Jan. 28 and 29, and resulted in a win for "C" Sqdn., Iraq Aircraft Depôt, with 37½ points. No 5 Armoured Car Company were second with 24 points, and No. 45 Sqdn. third with 23 points. Teams from Basrah, Shaibah, and Mosul took part in the competition. A team from No. 6 A.C.C., Kirkuk, were unfortunately delayed, and were too late to take part.

The boxing was of a high standard, and all the entrants showed fitness, hardiness, and great keenness.

The results of the finals and semi-finals, which took place on the second day, in the presence of H.E. the Acting High Commissioner, the Air Officer Commanding, and about 1,500 spectators, were as follows :—

Fly-weights.—Final: L-AC. Mayes, No. 84 (B) Sqdn., v. AC. Johnson, No. 70 (H) Sqdn. Johnson piled up the points and beat Mayes with a margin. A good fight.

Bantam-weight.—Semi-final and Final: In the semi-final AC. Judge "C" Sqdn., I.A.D., beat Cpl. Wasley, R.A.F. Hospital, and AC. Stockwell, "B" Sqdn., I.A.D., beat Bates, No. 45 (B) Sqdn., both on points. In the final a good fight was witnessed, an extra round being given to decide the winner. Stockwell gained the decision.

Feather-weights.—Semi-final and Final: L-AC. Codling, No. 84 (B) Sqdn., beat AC. Borland, Stores Depot, on points, and AC. Smith "C" Sqdn, I.A.D., knocked out AC. Clarke, No. 70 (B) Sqdn. In the final Codling knocked out Smith in the last round. A good fight.

Light-weights.—Semi-final and Final: AC. Witham, "A" Sqdn., I.A.D., disposed of AC. Simpson, "D" Sqdn., I.A.D., and Sjt. Salter, "C" Sqdn., I.A.D., beat L-AC. Alford, No. 45 (B) Sqdn., both on points. Alford was awarded half a point as a good loser. Salter, in the final, knocked out his opponent in the second round.

Welter-weights.—Semi-final and Final: AC. Richards, "C" Sqdn., I.A.D., being knocked out by L-AC. Fairbanks, R.A.F. Hospital, and AC. Cardwell getting the decision on points over AC. Campbell, "D" Sqdn., I.A.D., Fairbanks disappointed by retiring hurt in the first round.

Middle-weights.—Semi-final and Final: L-AC. Lyford, No. 5 Arm. Car Coy., and AC. Casey, "C" Sqdn., I.A.D., having disposed of their opponent by a k.o. and "on points" respectively, met finally and the best fight of the evening resulted.

Light-heavy-weights.—Final: Cpl. Wilson proved the better man than Cpl. Goldsmith. Both men fought well. Decision on points.

Heavy-weights.—Final: Sjt. Ubee, No. 5 Arm. Car Coy., made short work of L-AC. Patterson, No. 45 (B) Sqdn., by knocking him out in the first minute.

OFFICERS' CONTESTS.

Fly-weights.—Flt. Lt. Attwood, No. 45 (B) Sqdn., unopposed.

Light-weights.—Flg. Off. Dick, No. 45 (B) Sqdn., beat Flg. Off. Brown, No. 70 (B) Sqdn., on points.

Welter-weights.—Flg. Off. Mitchelmore, No. 70 (B) Sqdn., beat Flg. Off. Burnett, No. 45 (B) Sqdn., on points.

Light-heavy-weights.—Flg. Off. Drabble, Stores Depot, after an extra round of one minute was defeated by Flg. Off. Nichol, No. 70 (B) Sqdn., on points. Flg. Off. Drabble was heartily applauded for his exhibition.

Boxing in Egypt.

The second annual team boxing championships of the Middle East Command, took place at No. 4 F.T.S., Abu Sueir, on Feb. 3 and 4. The standard of boxing has improved considerably, and great enthusiasm prevailed.

The Challenge Cup was won by "C" Sqdn. (Stores), R.A.F. Depôt, Aboukir.

Group Capt. Bowhill, C.M.G., D.S.O., who presented the Challenge Cup, referred to the fine qualities developed by Boxing, and complimented the Physical Training Staff on the excellent arrangements made for the contests.

The team placings were :—

"C" Sqdn., Aboukir, 27 pts.; "A" Sqdn., Aboukir, 22 pts.; 208 Sqdn., 19 pts.; F.T.S., A to K, 16 pts.; 216 Sqdn., 16 pts.; F.T.S., L to Z, 11 pts.; Depot B2, Aboukir, 11 pts.; Depot B1, Aboukir, 6 pts.

The results of the finals and semi-finals were as follows :—

Fly-weights.—Semi-finals: Robinson beat Highfield; Wood beat Collier. Final: Wood beat Robinson. Wood was the more aggressive of the two and by his offensive methods gained the decision.

Bantam-weights.—Semi-finals: F-S. Sallows beat Rutherford; Puckett beat Cunningham. Final: Sallows knocked out Puckett in the 1st round. Sallows is the old R.A.F. champion and completely outclassed his opponent. After a brief spar, Sallows walked into his man and put him down for the count with a left hook to the point.

Feather-weights.—Semi-finals: Leebrooke (Depot) beat Symonds; Williams beat Kirby. Final: Leebrooke beat Williams on points. Leebrooke, the stockier of the two, opened up in aggressive fashion. Williams was content to box, and after an extremely even bout the Judges must have found it difficult to decide the winner. Williams, who was the champion in this weight in 1923, may be counted somewhat unfortunate in losing the verdict. He was the cleverer boxer, but Leebrooke gained the verdict by his early aggressive tactics.

Light-weights.—Semi-finals: Leech (216 Sqdn.) walked over. Davidson scratched, M.O.'s orders. Cook beat Harding. Final: Leech beat Cook on points. This was Leech's first fight. Cook, who had had two hard fights previously, met a much fresher man, and after boxing well for three rounds was unlucky to lose the verdict.

Welter-weights.—Semi-finals: Gilmour beat Richardson; Sjt. Franklin beat Shead. Final: Franklin beat Gilmour on points after the best bout of the evening. Franklin, a forceful boxer, found a very plucky opponent in Gilmour, who, in the second round, shook his opponent with a beautiful right hook to the point. Franklin, however, rallied, and after three rounds of splendid boxing ran out a clear winner. Gilmour with a little more experience should do well in the future.

Middle-weights.—Semi-finals: Clarke beat Carter; Dalton (Depot) beat Gardner. Final: Dalton beat Clarke, the Referee stopping the fight in the third round after Clarke had taken a lot of punishment from a more experienced boxer.

Light-heavy-weights.—Semi-finals: Brockwitz (F.T.S.) beat Ellis; Cheverton beat Johnson. Final: Brockwitz beat Cheverton. Cheverton was slightly the more aggressive, but Brockwitz, who was faster on his feet, evaded his forceful opponent, and, boxing him, piled up sufficient points to secure the verdict.

Rowing in the R.A.F.

A Rowing Club, mainly for Cadets, was started at Cranwell last year by one or two Officer enthusiasts who had had some experience; arrangements had been made with the Newark Rowing Club, which is approximately 15 miles from the Cadet College, whereby, for a small subscription Officers and Cadets could become Honorary Members and use the Newark boats and Club House.

Arrangements were unfortunately not completed until late in the Season, with the result that it was too late to enter for the earlier regattas.

The keenness shown by both Officers and Cadets was remarkable. Several good oars were discovered, and a Cadet College Four was entered for Derby Regatta. Owing to bad luck and the lack of a cox who knew the course the R.A.F. crew were beaten, by just under half a length. The pairs, for which a crew was entered, had to be scratched owing to the indisposition of the stroke.

A crew was also entered for the Nottingham Regatta and came up against tough opposition, but won their two heats and the final by three-quarters of a length, and carried off the Berry Cup valued at 50 guineas, and handsome silver pots.

It is hoped that with such a promising start that many Units who are within a few miles of a river should be able to get over transport difficulties. There should be no reason why they should not fix matters with local Rowing Clubs and enter for local regattas.

Eventually Inter-Unit races could be arranged in the R.A.F.

AIR AFFAIRS IN PARLIAMENT.

THE R.A.F. IN EGYPT.

In the House of Commons on Feb. 17, in reply to a question by SIR F. WISE, the SECRETARY OF STATE FOR AIR said that there were six R.A.F. stations in Egypt, including Command H.Q. and repair and training establishments. The estimated cost for 1925-26, including a detached Flight in the Sudan, was £1,170,000.

THE CAIRO-CAPE FLIGHT.

In the House of Commons on Feb. 17, in reply to a question by LIEUT.-CDR. KENWORTHY, the SECRETARY OF STATE FOR AIR said that the flight by four R.A.F. machines from Cairo to Cape Town was being undertaken in accordance with the policy of the Air Force to make visits by air to distant parts of the Empire and to gain experience in long distance flying. At the present moment there was no intention of establishing an R.A.F. Mail service to the Cape, but he hoped that the experience gained on this and other occasions might help in deciding the practicability of the operations of civil air services on these routes and linking up communications with distant parts of the Empire by air.

EQUIPMENT FROM THE R.A.E.

In the House of Commons on Feb. 17, in reply to a question by CAPT. BOURNE, the SECRETARY OF STATE FOR AIR said that apart from the production of small numbers of instruments and accessories which had not yet been standardised for service use, no equipment for the Air Force was ordered from the Royal Aircraft Establishment at Farnborough [The Air Estimates show that £350,000 worth (alleged) of material is to be bought from the R.A.E.—ED.]

AIR MAILS.

In the House of Commons on Feb. 17, in reply to a question by LIEUT.-CDR. KENWORTHY, the SECRETARY OF STATE FOR AIR said that the fortnightly air service from Egypt to India and back would be timed to fit in with the arrival and departure of the mail boats, but he hoped that ultimately it would be linked up with European air mail services. The possibility of the extension of the service beyond India was continuously under consideration and investigation. He was quite aware of the advantage to the trade between this country and the Dominions that would follow from an extension of the carriage of mails by air to the Dominions.

THE ANGLO-IRAQ TREATY.

On Feb. 18, the House of Commons approved the Treaty signed between representatives of His Majesty and of the King of Iraq, in order to fulfil the stipulation made by the Council of the League of Nations in connection with the settlement of the Iraq boundary.

The Treaty was ratified by 260 votes to 116.

THE FREE STATE AIR FORCE.

A detachment of the Irish Free State Air Force left Baldonnel Aerodrome on Feb. 19 to take part in the search for the *Cardigan Castle*, the Swansea trawler which foundered in Galway Bay on Feb. 14.

The detachment, consisting of five machines, and commanded by Colonel Russell, O.C. Free State Air Force, has established a temporary base at Oranmore, and several flights have been made over High Island, where it is thought the lost crew may be marooned. Parcels of food and medicine were dropped on the island, but, owing to the poor visibility no trace could be found of the missing men.

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DRILL IN THE R.A.F.

Hereafter follow three letters on the subject of Drill in the R.A.F., which deserve the consideration of all ranks in the Air Force. Coming as they do from such widely diverse places as El Paso, Texas, Quetta, on the Afghan Frontier, and an English provincial town, they show the interest which the subject arouses,—and, incidentally, they show how The Aeroplane is read all over the World.

When all three letters are considered as a whole the conclusion at which one arrives is that of a previous writer, who signed himself "Pro et Con," namely that drill is necessary and desirable, but that if drill and the work in the shops are both to be done with equal precision the personnel of the Air Force must be enlarged, so that the time which is spent on the parade-ground may be made up in the shops by additional hands to do the work. And only the Treasury can decide whether the money can be found to pay and keep those additional hands.—C. G. G.

An American View.

El Paso, Texas, U.S.A.,

Sir,—After reading in your issue of Sept. 30 the letter by "Pro et Con," concerning drill in the R.A.F., I am prompted to make a few remarks on the same subject.

Before going any further, I may state that I am connected with the U.S. Air Service, and have served in the B.E.F.

"Pro et Con" regrets losing the benefits derived from drill, and thinks that a little form fours, right turn, quick march, etc., would greatly aid in the making of an aviator. No doubt the clerks and chair-warmers of the R.A.F. would be greatly benefited by this form of exercise, but consider the mechanics, the men who labour hours every day to keep the Air Force functioning. Do they need drill to keep in trim? It seems to me that they get quite enough exercise as it is.

If "Pro et Con" were kept busy pushing planes inside hangers, cranking props and lifting tail assemblies, there is no reason to doubt but that his opinion would quickly change.

The hundreds of men who obtained rapid promotion during the war because they were skilled mechanics deserved that promotion because of their superiority in highly specialised technical knowledge, *not in drill.*

Indeed, there is to my notion no good reason why a mechanic should be a well-drilled infantry soldier. Granting the slight value of drill as exercise, why should an already overburdened budget be taxed still more to support it?

Seriously considered as a part of Air service training, it seems as useless and grotesque as kilts on Esquimaux.

(Signed) M. L. P.

[M. L. P. omits to consider three important points. (A) For the *moral* of the Service, the men must hold themselves well, walk well, and dress well. These habits are not obtained by pushing planes about nor by cranking engines. (B) For their personal convenience when moving in mass, the men must know ordinary battalion drill. (C) For their personal safety when on active service over-seas the men must know the work of an infantry soldier so as to be able to defend their camps if attacked, or to defend themselves if sent to rescue machines which have landed in more or less hostile territory.—For those personal reasons alone, drill is not merely advisable, but absolutely necessary.—C. G. G.]

An Indian View.

Quetta,

Sir,—Your leader in The Aeroplane dated Sept. 16, "On the Spirit of the R.A.F.," particularly the part dealing with Drill as an aid to efficiency, has created a lot of comment among the men of our Squadron, and I feel that I should like to put before you the feelings and views of that vast majority, the "Utheranks."

Your first definite statements are to the effect that "Precision in Drill indicates Precision in the Workshop" and that "The more highly skilled the mechanic, the better will be his deportment on Parade." The first statement (which you cite as the belief of the more highly intelligent Officers and men) is entirely incorrect.

Precision in drill needs only the intelligence necessary to learn parrot fashion a dozen or so commands and to connect those with the requisite number of definite movements—neither the orders or their movements ever vary, each is mechanical and entails little or no individual thought or initiative, only that little concentration that is necessary to grasp the order immediately it is given and to connect that order with the required manœuvre. It therefore follows that even with a very low standard of intelligence, a recruit in the 13 weeks concentrated work on the Square that was given when I left England, can assimilate enough knowledge of A.P. 818 to carry out his drill with precision, whereas in the workshops he may be the veriest "wash-out."

Your second statement is entirely right in theory, but sadly wrong actually. I've yet to know the mechanic or technical man who takes a *pride* in his drill and with no pride or interest the "deportment on parade" suffers. These are not "arm-chair" conjectures but actual facts, for my numerous brother Airmen and I are those people you write about and we *know.*

Whatever you do, please don't class us as a whole with that very, very small minority "bolshevikly" inclined to whom every form of discipline or parade is an anathema. The majority of us realise how that discipline is absolutely necessary to the Corps, but the parade ground need only be a place to hold the parades necessary for the orderly running of the Squadron.

It is as well to remember that to keep a Squadron "Serviceable" and up to the criterion of efficiency it is necessary to work all the Working Hours that are laid down, and a long time after they are finished. Twelve aeroplanes only do not make a Squadron. There is the Transport Section who never really finish work, the Signals who keep Watches day and night, the Photographers who have to rush out hundreds of prints at a moment's notice and that collection of trades which go to make a Headquarters Section, whom the Flights expect to turn out a repair job, etc., irrespective of the time of day.

It is no consolation to know that the evening's entertainment you had planned was a "wash-out" because of the hour's work lost through drill. Men *must* be excused parades otherwise the R.A.F. would be an Air Force in name only. To quote, "The success of an Air Line is on the ground." But the success of the Air Force does not depend on the Parade Ground or the countless, annoying, petty trivialities of Army Barracks that are meted out by non-technical ex-Guardsmen.

Yours apologetically,
(Signed) "Ayidee."

[It is perfectly true that precision in drill does not necessarily entail precision in the shops. But is is an "outward and visible sign of an inward and spiritual grace"—as the Collect says. A clod-hopper labourer *may* be made a "good drill" by sheer hammering at it. But an intelligent man will always be better and smarter. And a man who is a good mechanic will be a better mechanic for being also a good drill. Despite "Ayidee's" opinion, there certainly are many excellent mechanics who like drill because of the "spell of ordered movement."

One quite agrees that drill should not encroach on the men's spare time. They earn every moment which they are entitled to call their own. But, on the other hand, men must not be excused parades. And the routine work of "Army Barracks" is necessary if men are to live healthily together.—C. G. G.]

An Ex-R.A.F. View.

Sir,—Being a constant reader of The Aeroplane (a very interested one too), and an ex-Sjt. rigger of the R.A.F., I am tempted to place before you a few thoughts of my own, my excuse being an affection for the Service and for aircraft which has lost nothing through the passing of years. If my remarks are somewhat disjointed and my writing vile, my excuse is that I have had little opportunity for practice in matters literary. This being my first effort, I crave your indulgence, so here goes.

One notices in the daily press a lot of bleating about accidents in the R.A.F., and people who cannot think for themselves are led to believe that forty or so in a year is a terrible death roll, but if they could set this total beside the fatalities caused by such things as traffic, mine and railway disasters, etc., and then think of the number of hours flown they will see that flying is not the murder game that the press would have them believe. Nevertheless, everything possible should be done to minimise the risks which pilots have to take and this can be helped considerably by instilling into the minds of the mechanics a proper sense of their responsibilities.

Which brings us to the subject of the article in a previous issue under the heading "The Spirit of the R.A.F.," the main points of which deal with the advantages of the drill. Though judging from the article itself, there appears to be as great a difference of opinion among the officers of the present as there was in the war period as to whether drill is an advantage or just a necessary evil. But one holds the opinion that they, being the men on the spot, put there to do the job, are the men to judge. Whether they judge one way or the other must depend entirely on the needs and requirements, or perhaps one should say on what is required, of the station of which they are in command.

Now, having had the definite ideas of the Editor and those of officers, shown by their methods, perhaps the opinions of a former N.C.O. may be of interest. And having been a Serjeant-rigger I will speak from the rigger's point of view mainly.

I contend that the first thought of fitters and riggers should be for the safety of the pilots who have to place their trust in them. And to this end they should pay the most strict attention to every detail and should constantly be highly interested in their machines.

One holds that rigging is so important in the Service (unlike the engine, it cannot speak for itself before leaving the ground) that the Serjeant-rigger should be highly efficient and should always be working personally on every truing up and repair job that is carried out. And having once begun on such a piece of work, I hold that on no account whatever should the job be left until it has reached a stage when it is safe to do so. Even then it should never be allowed to depart from the minds of the serjeant and men who have left it. Therefore it is difficult to see how a drill period is going to be good in such circumstances, for a successful rigger should be so engrossed in his work, and he has so many thread ends, so to speak, in his mind, that to break off his job at a wrong period is nothing short of disastrous to the object he should have in view, which should be to work so systematically as to rule out any possible chance of a mistake.

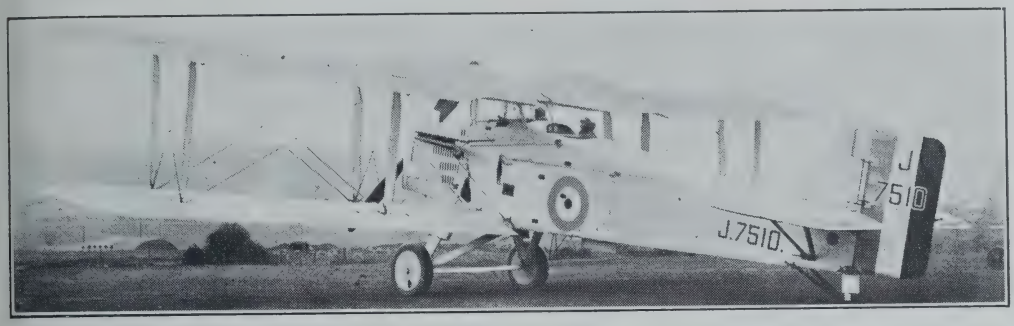
One knows from long experience that nothing irritates a skilled worker more than being continually interrupted and interfered with. By such methods every scrap of interest is quickly destroyed. Scarcely anything has a more damping effect on a man's enthusiasm than for the Powers-that-Be to give him the idea that his job is not so very important after all,—"it will do any time," sort of thing.

This enthusiasm in a Flight means a tremendous lot. Machines are unserviceable for a much shorter period. Less time is wasted in getting them into the air. They are much smarter in appearance and they are much safer to fly.

As an example I refer you to the doings of "A" Flight, Wireless and Observers' School in the year 1917 at Brooklands under (at the time) Capt. Mounsey and later Capt. Fuller. They were old B.E.s with their 90 h.p. R.A.F. engines doing eight and nine hours in the air per day and the Flight totalling up to eighty-three hours flown in one day.

There were sweepstakes promoted among the mechanics (twopence entry), the winners for the day being the fitter and rigger whose

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THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

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machine did most time in the air. To see the mechanics "doubling" to get filled up (the tanks, of course) and then hustling to report "all ready" to the pilot, and to see those officers enter into the spirit (not the Shell) of the thing, was something to wonder at.

One had the honour to become rigger-serjeant to that same Flight (after joining it as 2nd A/M) at Worthy Down, and there everyone continued just as proud of the Flight, which did all its own repairs. Our complement of machines was anything between eight to fifteen of various types, the main being Bristol Fighters. (Your N.C.O. correspondent in one of your later issues complains that he has to work overtime. Ye Gods! It should be less men and more work, not more men and less work.) All this was done without any drill at all, and it would never have been done if drill had been allowed to interfere.

Unfortunately, in those days, and no doubt the same conditions exist to-day, there were men and boys who reached the rank of serjeant or flight-serjeant chiefly by virtue of possessing a long tongue and the gift of using it, and whose qualifications on joining the Service were the restoring to its original position their mother's wringing machine wheel on those exciting occasions when it became unput, and actually knowing how to put the spilt pin back in its place. Undoubtedly, most of these acquire their stripes through gentlemen who, though trained in the art of observing, in some unaccountable manner fail to observe.

This type of N.C.O. never having been taught a trade does not recognise the term "skilled worker" and gives no encouragement to that class of person, often through sheer jealousy. He sees to it that their skill is employed in the cook-house or on the latrines, and will often deliberately order a rigger off his job to do an engine fitter's job and *vice versa*, merely because he knows how very aggravating it all is.

One remembers such a flight-sergeant sending the engine-fitter serjeant to dismantle a machine which had forced-landed, simply because he knew what a mess there would be to sort out before it could be assembled again. All very childish, but very true, and, in a Service which employs skilled men, very irritating.

That such a state of affairs is not good for the Service must be obvious to anyone with a grain of sense and certainly is far more the cause of sloppiness than is the lack of drill. The only use such N.C.O.s serve is to convince people of the truth of the old saw which lays it down that an empty cask makes the biggest noise.

Officers who neglect to use keen judgment in recommending men for N.C.O.s may easily contribute to the undoing of themselves and those whom they command. One calls to mind the case of a 1st A/M engine-fitter who, when doing an engine overhaul, numbered the piston rings on the outside with a three-cornered file to make sure that he got them back in their proper places Yet he became a corporal soon after.

While a corporal he certified a propeller-shaft to be only five-thousandths out, after the machine had been over on its back on the ground. When it had been repaired and was almost ready for going out to be tested one noticed that a blade of the new prop was touching the leg of an engine stand which stood in front. Being, I suppose, one who likes to know, one found on turning the prop that the other blades did not come anywhere near the same position. On the shaft being tested again it was found to be sixty-five thousandths out. The result was that the strength of the cook-house staff was augmented by one corporal. And one fails to see that drill would have made much difference.

But that drill is absolutely essential goes without saying. To have an Air Force undrilled and undisciplined is unthinkable. But Wembley Tattoos, though excellent for propagandist purposes, will not be much use in defending the country from enemy aircraft. So, to have efficiency in drill without impairing the work of a Station is the problem, and one which is easily solved. The Serjeant-Major of every station should get his N.C.O.s out of bed an hour earlier on certain mornings, and keep them at the proper standard necessary. The men could be sent in batches, two or three at once from each flight or section continuously, until all have been, for every station, back to the Recruits' Depot, or to some drill centre, for one month each year, returning to their units on completion of the course.

In this way the work of every station would go on just as usual. And thus all would have an adequate knowledge of drill. In consequence N.C.O.s would be held in greater respect by the men, for an N.C.O. needs to be an exceptionally clever mechanic if he has to depend on skill at his job to counter-balance lost prestige and the secret contempt of the men through lack of knowledge on the parade ground.

But, every airman should bear himself smartly whether drilled or not. His pride in his calling should be sufficient incentive. The Air Force being an Air Force and possessing aircraft, one believes that the proper upkeep and handling of such aircraft should be absolutely the first and the last consideration and the personnel trained with that end in view.

That some of them are not so trained is shown in photographs in The Aeroplane where one frequently sees depicted so-called air-"craftsmen" tearing and pushing at wing tips trailing edges and so on. One can easily imagine such simpletons raising the tail off the ground lifting by the rudder.

Carelessness of this kind is so easy to obviate that the fact of its existence makes one fear that it may be allowed to creep in on more important occasions. And if mechanics are allowed to be careless on one occasion how can it surprise anyone if they show carelessness on some other job where care may be more essential than even skill.

(Signed) Angus Collin, ex-Rigger.

[Mr. Collin's views are well put and are the more convincing by reason of the humorous illustrations to his arguments. Of course men must not be taken out of the workshops to do drill. But both officers and men *should* do, say, half-an-hour's drill daily before going into the workshops, partly because it is healthy exercise and warms them up for their work (which is often of a cramping and muscle-binding nature), and partly because it maintains the smartness of the whole personnel of the station. The selection of N.C.O.s is an allied subject, and certainly affects precision on parade and efficiency in the shops. But it is too big a subject to discuss here.—C. G. G.]

THE FLIGHT TO THE CAPE.

On Feb. 17 Mr. Alan J. Cobham, Mr. A. B. Elliott and Mr B. W. E. Emmott arrived at the Cape of Good Hope. They left London on Nov. 16, and so the flight has taken just over three months.

There was much delay between London and Cairo, which *The Daily Telegraph* states was due to the unsuitability of the fuel causing trouble to develop in the engine. There was further delay after the engine had been put right while the B.P. petrol dumps were augmented by benzol from the National Benzol Association.

Mr. Cobham attributes much of his success to the Castrol Oil, the supplies and quality of which left nothing to be desired. The Titanine Dope on the wings and fuselage was not impaired in any way by the extremes of climate.

Great credit must go to the engineer, Mr. A. B. Elliott, who, against big and disheartening odds at the start, kept the engine going.

Mr. Cobham states that he will now attempt a high-speed flight home. The distance is 8,020 miles, and Mr. Cobham stated some time ago that for a long flight he could keep up an average of 800 miles per day and therefore it is not unreasonable to suppose that if things go in the manner which we have been accustomed to expect from Mr. Cobham and Mr. Elliott, he should arrive in London on the tenth or eleventh day after leaving Cape Town.

All will wish him luck in the flight, for this country badly needs a flight as good as those recently done by foreigners to restore our national prestige.

ON THE WAY TO THE CAPE.

The following letter, written by Mr. Alan Cobham at Broken Hill, Rhodesia, on Jan. 26, will be found interesting at the present moment :—

Dear Mr. Grey,—The following is a more or less sketchy report of affairs up-to-date. Forgive the negligence for not doing so sooner, but as you know, I am making a report for the Air Ministry, another for Imperial Airways on the route, engine and machine report and then general organisation of the show and supplies plus cables to the Press at home and abroad, plus corresponding with thirty-two Empire newspapers, and in the meantime we do a bit of flying.

We are now in Northern Rhodesia in the middle of the wet season, but curiously the 'dromes so far are not boggy, although we are expecting difficulties at Livingstone, our next stop. Both aeroplane and engine have behaved perfectly and the original supply organisation worked without a hitch, for at every landing ground we found ample supplies of perfect B.P. Spirit and Wakefield's Castrol R. What spares we did send forward reached their destination in good order and we found packets of K.L.G. plugs waiting for us exactly as arranged.

From a practical flying point of view nothing more could be asked for, because after our experience on the Rangoon flight, every conceivable possible improvement was made to the D.H.50, and the Jaguar leaves nothing to be asked for. We have discovered about three or four good items worth suggesting for improvement, but beyond that our machine is well capable of the job.

The only cause for any undue delay has been the following up behind the arrival of our supplies of benzol. We have been most unfortunate in Rhodesia because there had been an enormous "washout" on the railway outside Beira, and it will take a month to get the trains running again and so I had to arrange for the shipment of the stuff to Durban where it will come up by rail to Rhodesia for redistribution.

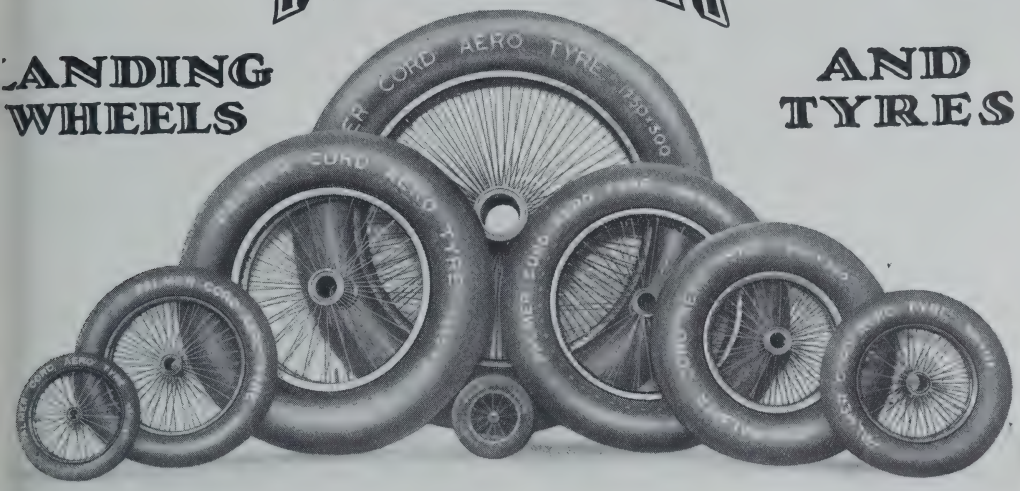
I say "redistribution" because in order not to delay I arranged for my original benzol supplies at Pretoria and Bloemfontein to be sent up to Northern Rhodesia by rail, and these will have to be replaced when the Beira supplies arrive at Durban. Again, the boat on Tanganyika Lake broke down and so we had to carry sufficient supplies of benzol in the machine to carry us over Abercorn to Broken Hill.

What with laying down the fuel supplies, oil, spares, etc., arranging to have the landing grounds put in order and the general organisation of the supply question and then the reorganisation of the benzol supplies from Cairo to the rest of the route, I can assure you that if the flight has done nothing else, it has been a great experience in making supply organisation, and an eye-opener to the fact that the whole of Africa is under some sort of administration and the air route under British and that white people live in these places and endeavour to develop the territories and that supply can be transported to most parts.

The great possibilities of commercial Air Routes up to my present experiences seem to lie between Cairo and Central or Equatorial Africa by way of the Nile. From Tabora to Broken Hill via Abercorn and N'Dola is simply hopeless for a commercial air route, owing to the impossibility of landing anywhere other than on thick bush, swamp or forest for 97 per cent. of the journey and even if one did get down anywhere one could never get off again.

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central
Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

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KINDLY MENTION "THE AEROPLANE" W HEN CORRESPONDING WITH ADVERTISERS.

Of course our flight is not a commercial air transport flight, but a pioneer flight of survey in which we are out to find the possibilities of making commercial air transport routes throughout the Empire, and naturally in surveying the route we have to take certain risks that do not constitute commercial aviation.

In the Sudan, i.e., Southern Sudan, the route is impossible for aeroplanes as a commercial job, for from Malakal to Mongalla it would almost be impossible to make a successful forced landing, at least one where it would be possible to get off again. The same applies from Mongalla to Nimule and on to Tuiga, either owing to rocky ground, forest or swamp.

However, one should be able to get down without hurting oneself and get to habitation on a road way.

On the return flight I shall try another route direct from Kisumu to Mongalla *via* Mount Elgin, to see if it is better country to fly over.

In summing up the question of commercial air routes I always think of the remarks I heard by a French air transport manager, when he said, "In these days of aviation the pilot on a commercial air route should always be at peace with the ground beneath him."

I think that this sums up the whole question, because if the pilot cannot "be at peace with the earth beneath," if it is due to the amount of water about, then see if a seaplane will get over the difficulty, and if this fails we shall have to resort to multiple engines. But we cannot go on running commercial air routes so called, which are liable to disaster on forced landing, in the hopes that some day, if we do enough flying, we shall get the aeroplane that never fails.

True we must aim at this ideal and no doubt some day we shall get there. But in the meantime we must have commercial air transport and must bear in mind that an air route ceases to be a commercial air transport route the moment there is any danger in it above the normal danger attached to any other form of transport. So that in the meantime until we get our perfect seaplane or aircraft that never fails we must carry on with any substitute and makeshift, no matter how far from the ideal, that will ensure safe flying.

Re the performance of the D.H.50. Up to the present I have taken off from nearly every landing ground with almost full load, purposely to make a good test, and we have had no difficulty. At Abercorn I estimated that our load was 4,200 lbs. and we lifted at between 55-60 m.p.h. on the Pitot tube in a run up a gentle incline into still air in 300 yards, and Abercorn aerodrome is 5,600 feet above sea level. Re the Siddeley Jaguar, it is true that I am nursing the engine but up to the present the engine has run like a clock, never having faltered for a moment or given us any anxiety. [That is, presumably, since leaving Athens.—Ed.]

Elliott has been doing the doctoring in first-rate order and I have simply tried to arrange so that he could go through his schedules in exactly the same manner as he would at home on Stag Lane Aerodrome. Mr. Emmott, our cinematographer, I think is happy in the thought that he has got some very good pictures and at the same time is becoming an experienced airman.

Our Titanine doping scheme has been absolutely perfect, for everyone remarks upon the beautiful condition of our wings which are unblemished and are as tight as a drum, whether they are standing in the pouring rain for days or so hot that to touch them would burn one's fingers, owing to standing in the tropical sun.

Our B.T.H. magnetos so far have been perfect despite changing conditions. The Palmer tyres apart from running over a broken glass bottle have stood up to everything. And, of course, with the K.L.G. plugs we take it for granted that they do not fail. All the instruments fitted by Smith and Son have run perfectly and caused us not the slightest worry and the Hughes Aperiodic Compass I reckon is the best aeroplane compass made. I thought our paint might blister on some occasions but evidently Pinchin and Johnson have some secret process.

I still continue to admire the sporting and long-sighted policy in the interests of aviation of such contributing companies as J. Stone and Co., Earle and Bourne and Co., Brunton and Sons, Accles and Pollock, Brown Bros., and Mallinson's (whose timber, despite the tropics, is as when we started), in contributing to the flight.

I hope in the next few days to get a thorough insight in the aviation question in South Africa, at least commercial possibilities, and thus finish the somewhat extensive and detailed Imperial Airway Company's survey report.

I do not think that the flight could have been accomplished so far without the wonderful co-operation of the R.A.F. (to whom I am submitting daily a report on my experiences), who readily fall in with the flight scheme and Pickfords' organisation and helped me with both supplies and landing grounds, although on the last-named subject my eternal thanks are due to the Civil Aviation Branch combined with the R.A.F. at the Air Ministry at home.

After Cape Town we shall endeavour to make a more or less dash flight home.

Yours sincerely,
(Signed) Alan J. Cobham.

THE JUNKERS IN SOUTH AFRICA.

It is understood that the negotiations which have been proceeding between the Union Government and the Junkers Company have culminated in a contract whereby the Junkers Company will undertake to operate an air service between Cape Town and Durban and between Durban and Johannesburg.

A small subsidy will be paid by General Hertzog's Government, but the contract will only be for a short period.

If the results of this demonstration period are considered satisfactory, doubtless a further agreement may be expected. This, however, may take the form of registering an air line company in South Africa which would use Junkers aircraft.

The patriotism of General Hertzog's Government may be judged by this contract. But as Hertzog was a Boer leader in the South African War, his attitude is comprehensible.

At least one British firm had negotiated for the contract and had offered not only favourable terms but experience which is worth a great deal of money.

However, doubtless the work will be done by British vehicles ultimately. Things generally end that way where efficient transport services are necessary.

The South African Minister of Posts has announced in the South African House of Assembly that a tentative agreement for one year has been made with the Junkers Co. under which the Government proposes to subsidise the services to the extent of £8,000 annually.

He added that the agreement was subject to certain conditions, including (1) that a company shall be formed in South Africa with only British subjects on the board, four of them at least resident in South Africa, while one director shall be nominated by the Government; (2) the service must be operated exclusively by a South African personnel; (3) the arrangement is not to be complete until a substantial financial guarantee has been lodged with the Government.

The service to be operated will be a weekly one for passengers, goods and mails betwen Cape Town and Johannesburg via Oudtshoorn, Port Elizabeth, East London and Durban.



ON THE WAY TO THE CAPE.—A photograph, taken by Mr. Ryder V. Tivy, late R.A.F., and one of the pioneers of aviation in Bristol, of Mr. Elliott covering up the engine of the D.H.50 at Livingstone, Rhodesia.



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THE WOES OF THE PRIVATE FLYER.

The fourth of the Royal Aero Club's monthly House dinners held on Wednesday, Feb. 17, was the occasion of a discussion on the subject of Private Flying.

The chair was occupied by the Duke of Sutherland, who, opening the discussion, mentioned that since he had last been present at one of these functions he had been travelling in the South and had had opportunities of seeing the French Air Service at work in Morocco, and Major Franco at Casablanca in the course of his great flight across the Atlantic. The subject of discussion for the evening—Private Flying—was now being considered by a committee of the Club, who had recently received from the Air Ministry a note of amendments to the regulations affecting the private pilot which they were prepared to consider.

Mr. F. T. Courtney apologised for having to depress the meeting by discussing something which did not exist. He personally had owned a private aeroplane for three years and had succeeded in flying it once. Air Ministry regulations were designed to protect the pilot and the public. The only way to make flying safe was to fly as much as possible, and thus gain extensive experience of how danger could be averted. Motoring owed its present reliability entirely to the vast use of the motor-car.

The only way to get similar practical experience with flying was to remove the restrictions which now stopped flying. He thought some regulations should remain. Proper registration was essential, and the licensing of pilots should remain. Dangerous flying should be dealt with by prosecuting offenders. Examination as to the rules of air navigation should be retained as such knowledge was important. The medical examination at present was ridiculous and unnecessary. It was rot to tell a man his eyesight was not good enough for landing if in fact he could land. If the pilot could fly he was fit to fly whatever the doctors might think The medical regulations at present might be an excellent alternative for *Punch*, but had nothing to do with flying. And why on earth should an aeroplane have to carry the mass of papers now insisted upon.

The Certificate of Airworthiness was the oustanding difficulty and should be abolished. The present regulations for Investigation of Accidents were also ridiculous. If a pilot broke his fuselage landing he could not remove his machine until the Archbishop of Canterbury had been called. (Mr. Courtney evidently got a little mixed. The eminent ecclesiastical functionary he mentioned is a member of the Board of Trade—not the Air Ministry.—Ed.)

The argument for the regulations was that the Ministry had to protect the public. A motor-car was much more dangerous to the public than any aeroplane—but he did not have to get a roadworthiness certificate for his car. If he did any damage with it he could be held liable for it—and that was adequate protection for the public.

Dr. Whitehead Reid said that he was a purely amateur pilot who had learnt to fly for his own pleasure since the war. He thought it was important that the number of people in his position should be increased. There were only two things necessary to produce that result. One was to show people how easy it was to fly, and the second was to make flying cheap. Whenever he gave anyone a flight he let them handle the controls and everyone was impressed by the simplicity of flying. He suggested that the Ministry ought to send out propaganda pilots—say on Moths—to take people up and let them do this. It would not cost a great deal to send out a dozen such missions to seaside resorts and the like and they would get thousands of people wanting to fly.

[The regular joy-riding firms might well retaliate and say that the Air Ministry might buy some D.H.66s and take people to Paris and other places free. Of course the proper thing to do would be to subsidise regular and reputable joy-ride firms such as the Berkshire and Surrey firms so as to enable them to expand and carry passengers at lower rates.—Ed.]

As to cheapness, the first cost of the machine was the real difficulty. So far as he could see, that could be reduced only by increasing the number of purchasers. Removing restrictions was one step towards this. He thought some medical restrictions were defensible, though the two and a-half hours' ordeal he had been through that afternoon was not. Some flying test was also desirable. Further, he thought all machines except single-seaters should have a C. of A., but for single-seaters it should be optional. This would allow of much cheaper experimental and sporting flying. There would be accidents, but these accidents if used properly would be valuable. He felt that the A.M. should take steps to give all pilots full particulars of all the accidents which they did investigate. Full information of this sort would be invaluable in showing others how similar accidents might be avoided.

He considered compulsory insurance of private aircraft undesirable as it would make the insurance people to uppish when it was important to keep them in their prope place. Insurance was at present the biggest charge on th private owner.

Major R. H. Mayo remarked that the two previou speakers conflicted in their desires. He agreed that re strictions should be removed, but not that any shoul remain. There was no justification for any restriction Mr. Courtney's view of the relative danger to the publi of the motor-car and the aeroplane was perfectly justified The blind, halt or lame could get driving licences for cars but they did not, or, if they did, did not use them more tha once. The dangerous people on the road were not the unfit but the over-confident and inconsiderate. There might b something in favour of examination as to rules of the roa in the air, but on the road the method of police proceeding in case of breach enforced the rules adequately. The flyin test was precisely analogous to driving tests for motorists The vast majority of road accidents were not due to novice and the same was true of flying accidents. He would lik to see the C. of A. and inspection regulations washed ou completely. His objection to the regulations was not criticism of the administrative officials, who did everythin they could to help, but of the whole system.

Flt. Lt. Soden said he would like to see all restriction washed out. It might involve some risk, but he though a year's trial of free flying could reasonably be granted The thing that was stopping private flying was the cost— no ordinary man could afford to fly. The Moth, for instance cost £885, and as long as that was the case he saw n hope that it would sell. Some of the constructors said th Ministry was responsible for the high cost. By this time som aircraft builders ought to know how to make a machine tha would stand up, and they should be allowed to do so with out interference.

When a satisfactory machine for private flying had bee produced the Ministry should order a quantity in order t bring the cost down to a reasonable level.

Capt. Goodman Crouch said that firstly he had t apologise for his existence, secondly to apologise for bein there, and thirdly he would criticise some of the previou speakers' remarks. Mr. Courtney seemed mainly trouble about the C. of A. As far as he knew, Mr. Courtney' C. of A. was O.K., and had been for years. He was all i favour of cheapness; the question was, how to get it. H thought there was reason to think that lessening of the re strictions would help and if that was true he and everybod else would agree that something must be done. The mai way to such a result was, he thought, to alter the presen methods of asking whether a given machine was safe.

The methods of a Government department were clumsy He instanced the case where a standard machine was fitte with over-size wheels for use on a muddy aerodrome an thereby made safer. Because the original wheels alone wer shown on the officially-approved drawings, an official of th Ministry had withdrawn its C. of A. This sort of thing wa all tommy-rot, and it was disgraceful that a responsibl official should not have and should not exercise discretio in a case of this sort.

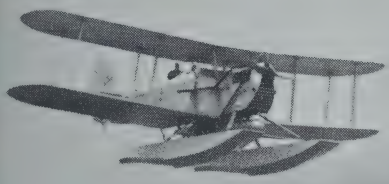
Machines for service of the R.A.F. must necessarily b built under very severe restrictions as to materials use and exact conformity with standard drawings for it to b possible to put them into production in emergency. Civ machines were in an entirely different category, and eac case could be judged on its own merits. He saw no reaso why the Government should not approve aircraft firms a fit to take responsibility for the airworthiness of their civ machines. But a unanimous agreement as to what was re quired was necessary before official action could be taken Did they want a complete wash-out of all restrictions, o would they be satisfied if the firms were allowed to do thei own airworthiness work?

The Under-Secretary of State for Air was very intereste in the subject and had told him that afternoon that he wa anxious to know what those interested in private flyin really wanted. So far the views expressed were not quit concordant.

Capt. de Havilland said that essentially their difficultie all come down to the C. of A. Nobody except a constructo could appreciate the real extent of their difficulties unde the present system. Air Ministry officials did their best t help—it was the system that was at fault. Constructor were treated as though they were dam fools and somewha dishonest at that. He thought the experience of years o hard work could easily be used more efficiently than wa the case to-day. He thought the analogy between motorin and flying was close and he was certain that we shoul never have attained the present state of motor-car develop ment under Government control. The aircraft constructor were ready to take responsibility for their products, and

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the Government control were removed the effect would be an immediate reduction of at least 20% in the cost of building aeroplanes. The individual troubles they encountered were usually small in themselves, but there were lots of them, and their combined effect was very large. Removal of these difficulties would permit of a very considerable reduction in the cost of aircraft.

Mr. Geoffrey Dorman said that in 1915 Mr. Courtney and certain others had taught him to fly an aeroplane. He then thought learning to fly was very difficult. But in the last few weeks he had bought a car and was learning to drive it. It was a very humble Morris-like car with no marked vice, but it was much more difficult to drive it than it was to fly. He had never hit anything with an aeroplane, but he had already hit three tramcars and a number of other obstructions with his car. Restrictions might be necessary and desirable in the public interests, but he was quite clear that all the restrictions should be applied to motoring and flying should be left free rather than the other way as at present.

Flg. Off. Boyes emphasised the fact that cost was the bugbear of private flying. The chief contributors to the high cost were Government control and insurance. The cost of inspection was serious. Insurance costs were high because the insurance firms had so little data on which to base their estimate of risk. Landing and housing fees were also big items. He was sure the aircraft firms were capable of doing their own airworthiness work, and he believed it would pay them to allow free use of their aerodromes to private flyers and give housing accommodation at nominal fees. The constructors would not lose by giving free accommodation.

Inspection might require some control. He thought the private owner should be able to obtain inspection by the manufacturer's representative, but with a right of appeal to a Government inspector if he thought the firm were trying to push a trade in spare parts unnecessarily.

The whole trouble was cost and anything that reduced cost would allow private flying to go ahead.

Mr. R. L. Preston said the initial cost of an aeroplane was the main difficulty. During the war the taxpayer had paid for vast numbers of aeroplanes which were now costing money to store. He thought it might pay A.D.C. Aircraft to allow private owners the use of some of these machines at a very low price, subject to their insuring them, rather than keep them idle.

They had recently formed a private owners' club with ten owner-pilot members and were going to hold monthly dinners at which their difficulties would be discussed. They would be delighted to give the R.Ae.C. all the information and assistance possible to help forward private flying.

Mr. F. L. Barnard said that he knew little about private flying, but as a civil pilot he felt a little uneasy about having large numbers of private aircraft rushing about the sky. However, he agreed that increased public interest in flying was desirable. The difficulty was cost, and to get cost down there must be more private flying—so that they were really up against a vicious circle. It seemed obvious that all unnecessary restrictions must be removed. He thought that attention was too much limited to the owner-pilot class of flier. He was convinced there were other possible types corresponding to the class of motorist who kept a Rolls-Royce and a chauffeur. He personally had often been asked by passengers whether a private aeroplane to be flown by their own pilot was obtainable. What was wanted was a four or five-seater, totally enclosed—a twin Lynx job would probably be necessary. He, personally, frequently met people who would like such a machine and thought that the demand would justify a supply. At one time they had given 5s. joy-rides at Croydon with a view to popularising flying and it took them all their time to handle the would-be passengers. He did not think they would be able to cope with the free passengers if Flt. Lt. Soden's scheme was adopted, but he was all in favour of joy-riding as a method of popularising flying.

Lt.-Col. Edwardes said that he felt rather like a lamb led to the slaughter—a feeling slightly impaired by the excellent dinner. The chief points of the Ministry's regulations criticised seemed to be the medical examination, the investigation of accidents and the C. of A. He doubted whether Mr. Courtney's remarks on the medical examination were sound. The examination was no more severe or inquisitive than a life insurance examination, and nobody squealed about that. (But they would if their insurance policy was renewable annually only subject to their passing a fresh examination.—Ed.) He thought there was not much difference between the two cases.

The C. of A. question was now being given careful consideration. Personally, he could not see why it should exist for private aeroplanes to-day, but it was necessary in the past because they had to try and prevent accidents in order to avoid an outcry in the Press. He said that the Press only took a real interest in crashes. [One would point out to Lt.-Col. Edwardes that one of the reasons why the Press takes such an interest in crashes is because they are prevented from taking an interest in much else by that pernicious document, the Secret List. If Sir Geoffrey Salmond's department could be persuaded to revise their ideas on secrecy the Press would have other matters about which to talk.—Ed.] Now that manufacturers had established reputation to maintain abolition of C. of A. would make machines safer because the makers would for their own sakes try to make them so instead of leaning on the Ministry's requirements.

It had been suggested in the Press that the cost of flying was largely due to the restrictions officially imposed. He pointed out that the cost to a pilot for licences, etc., varied from £7 3s. to £8 9s. in the first year and was £5 10s. in subsequent years. Housing for a Moth was £2 10s. per month—and a fair-sized car cost rather more to garage in London. The high cost of machines was due to the small quantities produced and was not, he thought, the fault of either manufacturers or the Ministry. There were not enough customers for them.

He thought that considering that private flying had been in existence for so short a time the progress made was wonderful. He did not think there would be any enormous result from a modification in the regulations. They were not going to get a crowd into the air at once.

They could not afford to revise the regulations and he sincerely hoped that Capt. de Havilland's estimate of the effect on cost would be justified by the event.

Capt. Fitzmaurice, of the Irish Free State Army Air Corps, said that as a visitor from the youngest of the Dominions he was greatly honoured by being asked to this dinner. The Irish were proverbially "again the Government" and as an Irishman he thought the private flyer over here had a "head of a grievance."

Flying was a sport and as such could not properly be restrained and restricted by red—or as it was known in his own country—green tape. It was a sport that ought to be encouraged. Air power was bound to be a decisive factor in the next war—which was bound to come, sooner or later. He hoped it would come later, for, personally, he had enough of the last one. But when it did come the possession of a large number of sporting pilots, who could only be produced by encouraging private flying, would be of inestimable value to the Empire.

He had a great respect for the private owner. He had to be wealthy under present conditions. He had flown a Moth, and he wished he could own one—but it cost too much. The cost was very largely due to restrictions and green tape. All restrictions within reason should be withdrawn and the private owner encouraged.

Major Dennison, of the Midland Aero Club, said that as far as they were concerned they thought medical examination and registration should be retained. He thought that inter-club touring would be valuable and should be encouraged. Their experience suggested that the running cost of their machines was not a serious factor, but the prime cost was. The capital outlay required was far too high, and it was doubtful how long the clubs under the present scheme would be able to carry on. It was undoubtedly, as suggested, a case of a vicious circle, and he did not see how it was to be handled. The idea of allowing approved firms to give their own C. of A. was excellent, but the 20% reduction in cost suggested by Capt. de Havilland as a possible result was not enough to meet the case.

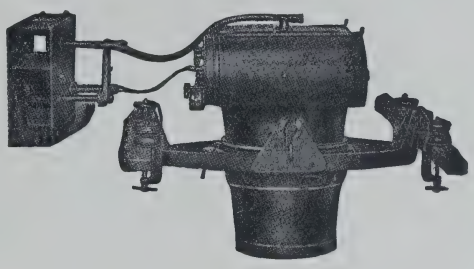
Lt.-Col. Outram said that it was his job to try and enforce the present very reasonable regulations in a reasonable way. He had, he thought, succeeded only because there was no much flying, and what would happen if there were many private pilots, Heaven only knew. His work fell into two categories—inspection during manufacture and inspection in service. Approved firms could do their own inspection during manufacture, but what was to happen afterwards. The difficulties of such inspection were very serious. He instanced the case of a modification of a small fitting on an Avro called for as the result of an accident. All the Avros in the country except one were modified by their owners, but that one eluded his inspector, and it was only by accident that he himself ran into the machine while spending a week-end in the country. The cost of the modification was about 10s.; it was a definite preventative of a recurrence of accident, but the owner of this machine could not be bothered with it.

He knew of many cases where manufacturers wanted C. of A. or A.I.D. inspection as a guarantee to their customers. If the C. of A. were abolished what protection did the customer get, and how was he going to persuade the insurance companies to cover him. The only people who wanted the C. of A. abolished were the lunatics, and he had had a lot of trouble in restraining such people from suicide. Reduction in the cost of aeroplanes was only possible as a result of increased production and not of removing regulations.

Mr. Lamplugh was next called upon by the Chairman

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but confined his efforts to joining in a call for Mr. Handley Page.

Mr. Handley Page regretted that Mr. Lamplugh was unwilling to defend the insurance companies. He thought they needed it. He himself could not speak on behalf of the Club, because they were still considering what recommendations they should make to the Ministry for the encouragement of private flying, and therefore he must not commit himself as yet. Representatives of the Air Ministry present were in the same position, and could only speak after disclaiming official concurrence in the views thus expressed. He thought, however, it was time somebody spoke for the Ministry, and having long experience of that body he felt he might speak on their behalf. Those familiar with Holy Writ would doubtless remember that the Epistle to the Ephesians mentioned that "the Prince of the Power of Air is the Devil, that old Serpent," and that elsewhere in the same Epistle was a passage: "Wrestling not with flesh and blood, but with spiritual wickedness in high places." It was the people right up at the top who were the great difficulty. Air Ministry officials were not blind to the march of progress—people engaged in aviation did not get blind. There was a great deal to be said in favour of regulation. I complete freedom had been allowed at the end of the war w should have beaten our swords into ploughshares and ou packing cases into Moths, and a great many accidents woul have occurred.

As it was, under very careful shepherding accidents ha been restricted, and a great and noble organisation had bee produced. Look at the Air Ministry—its buildings and it staff. Do not sweep away this great edifice and scrap it valuable staff. Think of all the homes that depended on it

Lt.-Col. McLean, before formally moving a vote of thank to the Chairman, made the very pertinent remark that befor the war there was a good deal more private flying tha existed now, no regulation, and not many accidents.

The Duke of Sutherland, acknowledging the vote o thanks, said that the discussion had been valuable and h hoped that the aspirations of most of the speakers for th increase of flying would be realised. At the present momen the public were friendly to flying, but it was doubtful whethe if Tom, Dick and Harry all began to fly and crashed int the public's pigsties and cucumber-frames that attitud would persist.

THE AEROPLANE CLUBS.

A Gift to the Light Aeroplane Clubs.

The following Petrol Distributing Companies—Anglo-American Oil Co. Ltd., British Petroleum Co. Ltd., Redline Motor Spirit Co. Ltd., Shell-Mex Ltd.—have together handed to the Royal Aero Club the sum of £1,000 which is to be applied for the purpose of encouraging Light Aeroplane Clubs under the Air Ministry scheme.

The intention is that this sum shall be used in connection with the purchase of new aeroplanes, but the condition is made that before any Club can obtain assistance from this fund it must first satisfy the Royal Aero Club that it has already been able to obtain from other sources a considerable portion of the necessary money.

The stipulation is also made that the type of aeroplane to be purchased is to be approved by the Air Ministry.

The London Aeroplane Club.

Time for the week was 16 hrs. 25 mins. with only one machine.

The following members had flying instruction:—J. S. M. Michie, R. C. Brighten, R. C. Presland, R. L. Preston, R. P. Cooper, N. Jones, Sir John Rhodes, S. O. Bradshaw, E. S. Brough, C. E. Murrell, C. H. Gould, A. R. Ogston, W. E. P. Johnson, A. P. Hunt, L. C. J. Mitchell, T. H. O. Richardson, G. Quirk, B. B. Tucker, O. J. Tapper, R. Thomas.

The following members flew solo: Mrs. Eliott-Lynn, P. G. Lucas, Major Beaumont, G. N. Warwick.

Capt. F. G. M. Sparks has now returned from his Instructor's Course at Upavon and has been granted an A.I. Certificate.

The Lanchester Motor Co. Ltd., of Birmingham, has kindly presented to the Club a sectioned R.A.F. engine for instructional purposes.

The Newcastle-upon-Tyne Aero Club.

Flying report for week ending Sunday, Feb. 21:—All the weather forecasts have been fulfilled this week. On Monday, only a half-hour was completed, Miss Leathart being the heroine, who carried out 30 mins.' dual under Major Packman. No. flying at all on Tuesday. There was rain almost continuously on Sunday, but five members flew under instruction, with Major Packman, and three Pilots flew solo, though whether for pleasure or as a matter of duty is not known.

Total time for the week, 20 hrs. 8 mins., made up as follows:—Dual, 16.0 hrs. 3 mins.; Solo, 3 hrs. 50 mins. (all "A" Pilots); Passenger, 30 mins.; Test, 5 mins.

The following members flew under instruction, with Major Packman:—Miss Leathart, Mrs. Marcks, Mr. MacMillan, Mr. W. Todd, Mr. H. Ellis, Mr. Wardill, Mr. Twine, Mr. L. Smith, Mr. C. Thompson, Mr. Somerville, Mr. Bruce.

Solo:—Mr. N. S. Todd, with Mr. Naylor as passenger; Mr. Baxter Ellis, with Miss C. Ellis as passenger; Mr. P. F. Heppell, with Mrs. Heppell; and Mr. R. N. Thompson, with Mrs. Marcks, on one flight.

Major Packman flew with Mr. Alderson as passenger.

The repairs to *Bernicia* are now completed, and, weather permitting, Major Packman will fly it up from Stag Lane on Feb. 26.

On Sunday, while the machine was flying, the following incident no doubt proved a welcome break.

A member, about to take a passenger for a 15 mins.' flight, twi became stuck in the mud when beginning to taxi. After being di lodged for the second time he opened out his engine a little and i was presumed that he intended to taxi up to the opposite end of th aerodrome and turn. He did not do this, however, and the spectator were horrified to see the tail of the machine rise and (much) later th machine took off.

Mr. Brown immediately proceeded to light a fire on the aerodrom and, on alighting, the pilot concerned thanked him profusely for s thoughtfully indicating the change of direction of the wind, and, wa about to mention that the engine did not appear to be pulling wel when he took off. It was then pointed out that the wind had n changed during the flight.

The Lancashire Aero Club.

Flying took place on Tuesday, Wednesday, Saturday and Sunday.

Mr. Cantrill and Mr. Scholes gave "dual" to the following:— A. Macnair (1 hr. 10 mins.), H. Jowett (35 mins.), P. Micholson (5 mins.), R. Colley (40 mins.), C. Agar (50 mins.), R. Williams (. mins.), D. Tummers (45 mins.), H. Stern (45 mins.), C. Parker (. mins.), L. Slater (25 mins.), A. Goodyear (15 mins.), J. Chadwic (25 mins.), D. Dyson (15 mins.), and J. Leeming (15 mins.).

Solo flights by M. Lacayo (35 mins.) and R. Williams (10 mins.).

Tests occupied 35 mins. Solo 45 mins Dual 8 hrs. 20 mins. Tot 9 hrs. 40 mins.

The third Annual General Meeting will be held at the Club Hea quarters in Manchester at 7.30 p.m. on Mar. 2.

THE BRITISH PRIVATE AIRCRAFT OWNERS' CLUB.

The inaugural meeting of the British Private Owners' Club too place at 3, Clifford Street, on Wednesday, Feb. 17.

The objects of the formation of the Club are:—

1. To bring together as members of the Club persons owning ai craft exclusively for private purposes; and to provide an organisatio whereby private aircraft owners can meet together to exchange view and discuss aeronautical affairs. This is being done by having a Clu dinner every other month.

2. Eventually to promote flying contests among private aircra owners and to offer prizes. It is hoped, if possible, to arrange a on day air race meeting during 1926.

Membership is open only to ladies and gentlemen who own, have owned, as amateurs, their own private aircraft. All members present serve on the Committee. The subscription is ten shillin per annum with no entrance fee. Mr. David Kittel, Artillery Mansion Westminster, is acting as Hon. Secretary and Hon. Treasurer.

At the inaugural meeting the following Founder Members wer elected:—Capt. G. de Havilland, M.B.E. (D.H. Moth), Capt. H. Broo (Avro), Capt. F. T. Courtney (Boulton and Paul P.9), R. L. Preston Esq., Coldstream Guards (B.E.2.E), Air Commodore Weir (D.H.5 Wing Cdr. Wynne, O.B.E. (D.H. Moth), Flt. Lt. Hamilton, M.B.E D.F.C. (Martinsyde), Flt. Lt. Soden, R.A.F. (Austin Whippet), D Whitehead Reid (S.E.5), David Kittel, Esq. (D.H. Moth), Dudley Wat Esq. (Sopwith Grasshopper).

A Meeting and Dinner of the Club will take place on Wednesda Apr. 7. Members will be notified of full particulars.



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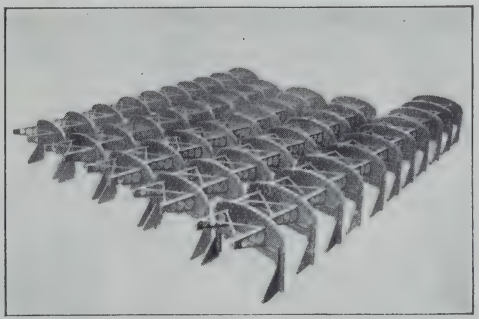


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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 10; Tuesday, 12; Wednesday, 14; Thursday, 15; Friday, 9; Saturday, 14; Sunday, 0.

Imperial Airways Ltd :

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin : Machines 44, passengers 99, freight 10 tons.

Air Union :

Paris—London : Machines 19, passengers 70, freight 10 tons.

K.L.M :

Amsterdam—Rotterdam—London : Machines 11, passengers 8, freight 1 ton.

Total number of trips by British Machines, 44, carrying 99 passengers. Foreign Machines, 30, carrying 78 passengers.

Comparative Figures :

Week ending Feb. 21 :

Machines, 74; Passengers, 177; Crews, 91; Total personnel, 268.

Corresponding week, 1925 :

Machines, 67; Passengers, 120; Crews, 84; Total personnel, 204.

Corresponding week, 1924 :

Machines, 68; Passengers, 113; Crews, 113; Total personnel, 226.

Corresponding week, 1923 :

Machines, 42; Passengers, 102, Crews, 76; Total personnel, 178.

Corresponding week, 1922 :

Machines, 45; Passengers, 81; Crews, 74; Total personnel, 185.

Corresponding week, 1921 :

Machines, 30; Passengers, 32; Crews, 38; Total personnel, 70.

Croydon Notes.

The Bristol Aeroplane Co. Ltd. are coming in for much congratulation on the fine performance of the Jupiter " of the latest type." The " Jupehound " has been performing with astonishing regularity.

When the D.H.66 was first discussed it was generally thought that Jaguar engines would be fitted, as Imperial Airways Ltd. seemed to be " walking out " with the Jaguar so much. This very practical proof of the excellence of the Jupiter left them practically no alternative. There is much satisfaction in the decision, for twenty engines is a substantial order for civil purposes these days and everyone is glad that it has gone to one of the great pioneers of British Aviation.

The most spectacular event of the week was the arrival at the aerodrome on Saturday morning of Mr. Jerry Shaw. Now there is really nothing spectacular in the ordinary way about the arrival of Mr. Jerry Shaw at Croydon Aerodrome, even on a Saturday morning. He has arrived at Croydon Aerodrome almost every morning with unfailing regularity for the past six years. He has arrived in aeroplanes, motor-cars, motor-cycles and on foot at Croydon Aerodrome on a Saturday morning, and no one has done more than say, " Good morning, Jerry "—and perhaps has thrown something at him. No, it was not the way that he arrived that was spectacular and nothing that he did was spectacular, BUT—he wore a *pale blue* suit of plus fours ! ! !. And that is why everyone else was " feelin' kind o' blue " too.

The petrol companies have all sorts of agreements as to control of prices of spirits and that sort of thing and people are wondering whether anything can be done about Mr. Shaw's light blue suiting. Whether or not it is some form of death ray design to petrify the users of other than Shell petrol one cannot say but it should certainly be an awful example to other lesser spirits.

One explanation is that the said suiting is being worn in connection with the night-flying experiments and is some sort of alternative to the Neon light. Developments are awaited with eager interest.

A.D.C. Aircraft Ltd. have had another busy week. Mr. Perry has made a number of test and demonstration flights with the Nimbus-D.H.9 and twice he has taken it to Stag Lane. He has also been testing an Avro-Airdisco and an Avro-Lucifer.—G. D.

Brooklands Notes.

Mr. Dudley Watt's Sopwith Grasshopper has now been repaired and is flying again. Mr. Preston's B.E. has been granted its C. of A. and has done some short flights. The owner is prepared to sell a half-share in the machine for £80. Mr. Cobb's Avro unfortunately damaged itself, when visiting Stag Lane; this has, however, also been repaired, and this machine is flying again. The A.N.E.C. III is expected to be tested soon.

Mr. Courtney's Decision.

Mr. Frank Courtney, the world-famous international tes pilot, states that he has severed all connection with the firm of Armstrong-Whitworth and Armstrong-Siddeley. Mr Courtney since the war has built up a reputation for soun judgment and careful testing which is beyond dispute.

The Schneider Trophy Contest.

One hears that the Supply and Research Department of th Air Ministry is still trying to make up its mind what ough to be done about this year's Schneider Trophy Contest. Tha department still apparently thinks that the contest should b put off until 1927, or, presumably, until such time as we hav built a machine fast enough to win,—and hopes that it may b so.

If the Supply and Research Department had a hand i Lawn Tennis matches, it would probably think nothing o asking the French to postpone the Women's Single Championship until such time as thirteen-year-old Miss Bett Nuthall had grown old enough to beat Mlle. Lenglen, who, b that time, may be hoped to be past her prime.

It is said that the Supply and Research Department look with horror on the wickedness of Mr. Saunders who is darin to produce racing machines without even consulting the Re search Authorities.

The Research Department, which has failed so signally i the past years in propagating Schneider winners, would d well to confine its activities to researching into the pas and present lives of the pilots and staff who will go to th States. It would be a dreadful thing if the favourite pilo or the whole team were excluded by the U.S. Governmen on the grounds of moral turpitude.—G. D.

Back-Stair Bolshevism.

The following letter has been received :—

Sir,—I have just read your leading article in this week's issue o The Aeroplane, and I am writing to you with regard to the sectio of the article at the end which you have headed " Back-Stai Bolshevism."

I make the following observations :—

1. You refer to " prices which the S.B.A.C. as a body had decide were impossible." The Society has nothing whatever to do wit prices and the subject of prices is never discussed.

I make this statement without any reservation at all; the questio of prices has never been discussed at any of the Society's meetings

2. You also state that not a meeting of the Society takes place with out somebody reporting to the Air Ministry what takes place at th meeting. I think you must be mistaken about this because it i well understood by members that the Society's proceedings are con fidential.

3. The last thing to which I want to refer is your statement tha there is a feeling among the officials of the Air Ministry that th Trade is divided against itself. If such a feeling exists it is wholl unfounded. Any action taken by the Society represents the unanimou decision of the members of the Committee.

(Signed) Charles V. Allen (Secretary).

Rumour and Fact.

A rumour seems to have got about, apparently through some error in transcription, to the effect that Major Franco had some trouble with his Napier engines at Rio de Janeiro on arriving there after his wonderful flight across the South Atlantic. A British representative at Rio who interviewed Major Franco says that no trouble whatever was experienced with the Napier engines throughout the whole trip and that they were in excellent condition at Rio.

The fact that they should be in such good condition is all the more satisfactory because, as may be remembered, one of the airscrews was damaged by heavy seas breaking over the boat when she alighted at Fernando Noronha. Major Franco continued his flight to Pernambuco with this damaged airscrew but the vibration became so bad that he flew the last hundred miles to the South American Continent with only one engine.

Nothing wrecks an engine more quickly than does the vibration of a damaged airscrew churning round out of balance. And the more credit is therefore due to the engine that no harm was done to it, for one may be certain that Major Franco did not stop that engine and trust himself and his crew to one single engine until the vibration became so bad that it was evidently dangerous to continue running that engine.

The fact that after such a strain on the gearing and its bearings, and on the portions of the crankcase which hold the gearing, the same engine, either with the new airscrew

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with the same airscrew doctored up, should have made e 1,200-mile flight from Rio to Monte Video and thence Buenos Aires without incident is the strongest possible stimony to the pre-eminence of the Napier Lion among the 'orld's aero engines.

LIGHTER THAN AIR.

[" Smaranda," a compilation in three parts by The Lord ıomson of Cardington. Jonathan Cape, 30, Bedford Square, ıdon, 288 pages, 7s. 6d. net.]

Lord Thomson of Cardington was Secretary of State for r in the Labour Government which assumed office in nuary, 1924. During the period which followed he became ıown to a great number of people connected with aviation. rtunately it is not necessary to come into personal con- ct with all novelists, but, on the other hand, it is always teresting to read a book whose author one has met and ıose work in other spheres one has appreciated.

From the Service point of view at any rate Lord Thomson ıs a highly successful Air Minister. One heard it said of m, " He is a soldier and therefore understands." And e surest way to the heart of a Service or an individual is understand.

" Smaranda " is not a novel, it is a romance, or, rather, a series of romances with a connecting link, the scenes of which are in the Balkans, Palestine, and Constantinople.

The first part of the book is a compilation of extracts from the Diary of General Y——, a temporary diplomat in a Balkan court. His mission is only partly successful and he becomes disappointed and slightly "bolshevik."

He is recalled and sent to Palestine, whence he writes flowery little essays to Smaranda, the beautiful lady who had made the Balkans a Paradise—in patches.

The last part of the book is a delightful story of Western Thrace, with vivid descriptions of its scenery and its people and an outline of its history. The book ends when General Y—— becomes a Labour M.P.—enough to end any romance.

C. M. MCA.

A FRENCH TEST PILOT KILLED.

On Feb. 22, M. Petit, one of the foremost French test pilots, was killed at Villacoublay. He was flying a new Bernard pursuit machine when the wing broke at an altitude of 300 feet and the machine crashed and caught fire. M. Petit was employed by the Société Industrielle des Métaux et du Bois (Avions Bernard) and had been a pilot since 1911.

NEW COMPANIES.

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Secretary: M. A. Klanck. Registered office: Broadway House, 1a, Adelaide Road, Hampstead, N.W.3.

PERSONAL NOTICES.

DEATHS.

COLE.—On Feb. 16, at Nobat Dakim, Arabia, as the result of a flying accident, AC.1. Jack Gwynne Cole, R.A.F.

MASON.—On Feb. 19, at Nobat Dakim, South Arabia, as the result of a flying accident, Flt. Lt. Eric Barnes Mason, Aden Flight, R.A.F.

Flt. Lt. Mason was granted the Royal Aero Club Certificate on Aug. 3, 1916. He served with distinction in the R.F.C. during the War 1914-18. In March, 1920, he was posted to Calshot for a course of instruction at the School of Naval Co-operation.

In April, 1921, he joined No. 25 Sqdn., at Hawkinge. He took part in the R.A.F. Pageant in 1924 and in October of the same year he was leader of the formation of Snipe machines from No. 25 Sqdn., which won the Air League Challenge Cup.

In November, 1925, he was appointed to command the Aden Flight.

FORTHCOMING MARRIAGE.

LEWIS—ROGERS.—The engagement is announced between Leonard C. Lewis, late R.A.F., youngest son of Canon F. E. Lewis and the late Mrs. Lewis, and Juliet Evelyn Mary, only daughter of the late Rev. Wilfred Rogers, and Mrs. Rogers, of Tremedden, Falmouth.

WIGGLESWORTH—BEMROSE.—The engagement is announced between Cecil George Wigglesworth, R.A.F., second son of Mr. George Wigglesworth, B.A., B.Sc., and Mrs. Wigglesworth, of Brighton, and Peggy, younger daughter of the late Arthur Cade Bemrose, of London and the Isle of Wight.

MARRIAGE.

DUNN—SMITH.—On Feb 6, Walter E. Dunn, R.A.F., son of Mr. F. C. C. Dunn, of Bridlington, to Kathleen Mary Smith, daughter of the late Mr. and Mrs. Smith, of Bridlington.

BIRTHS.

CLARK.—On Feb. 12, at a nursing home at Leicester, to Phyllis, wife of Flg. Off. J. F. Clark, R.A.F.—a daughter.

LISTER.—On Jan. 24, at "The Willows," Tayport, Fife, N.B., to Doris Winifred (*née* Wilkes), the wife of Sq. Ldr. T. V. Lister, R.A.F.—a son.

ROBINSON.—On Feb. 15, at Chaucer Drive, Lincoln, the wife of Flg. Off. Dennis Robinson, R.A.F.—a daughter.

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VOL. XXX. No. 9.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.

Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months, 32s.
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ON THE AIR ESTIMATES.—II.

Once in a while Governments really hasten official moveents. This year, as may be seen, the Government only lowed a week to pass between the issue of the Air Estimates id the Debate thereon. Consequently one is compelled this eek to inflict on the long-suffering readers of this paper me few notes on the balance of the Air Estimates together ith the essential points of the Debate which took place on hursday last, February 25.

Last week we reached Vote 7 of the Estimates, that deal- g with the Auxiliary and Reserve Forces. We may now roceed to consider Vote 8, Civil Aviation.

Civil Aviation.

The gross total for Civil Aviation this year is £473,000 as gainst £369,500 last year. Appropriations in Aid this year nount to £11,000 as against £12,500 last year. Consequently e net total this year to come out of the Air Ministry's ocket is £462,000 as against £357,010 last year. The net inease on the gross total is £103,490, while the gross increase the net total is £104,990,—One hopes that this is quite ear. The English use of the French word *net* can be very nfusing at times.

The Appropriations in Aid are made up of £7,500 for Rentals, ousing and Landing Fees at Croydon and £250 at Lympne id £50 at other civil aerodromes; plus Sales and Miscelneous Receipts amounting to £2,200; plus £1,000 estimated be received from licences, certificates, medical fees and iscellaneous receipts. From which one may judge that vil Aviation cannot yet be regarded as a source of income the Government, and that we shall have to wait for quite long time before we have agitations against raids on the ir Fund similar to the agitation against raids on the Road nd, or before we have any question raised in the House out the morality of taxing flying such as we have on the orality of taxing betting.

One thing which is admirable about the Civil Aviation stimates is the meticulous accuracy with which the amounts e estimated. For example, we have £1,200 for a Superinnding Officer of Civil Aviation Traffic, and we have £1 for ealth Insurance—employer's contributions. And we have 0,043 for wages of storemen and labourers, and £7 for Widows' etc., Pensions—employer's contributions "—at ympne. One only wishes that the balance sheet of Imrial Airways Ltd. accounted for the Government's subsidy of a hundred thousand and some odd pounds with the same delightful consideration for detail.

Most of the increase in the Civil Aviation Vote is due to £216,500 for Works, Buildings and Lands—an increase of £93,500 over last year. This is voted no doubt for the reconstruction of the aerodrome at Croydon. One notices that the total estimate for the reconstruction of the London Terminal Aerodrome is £267,000 which is a new estimate increased from the original estimate of £185,000.

Civil Aviation subsidies, that is to say Imperial Airways Ltd., which holds the monopoly of such luxuries, absorb £180,000, which is an increase of £20,490 on last year.

Apart from Works and Buildings the actual running of aerodromes seems fairly cheap. Croydon takes £21,390, Lympne £6,440 and other civil aerodromes £2,670, a total of £30,500. Air Routes and Surveys cost £30,000 of which only £12,000 goes for operational experiments. Technical equipment such as engineering, stores, sheds, petrol and oil account for £14,000.

Assistance to light aeroplane clubs amounts only to £13,000 as against £22,000 last year. One would like to see a good deal more assistance given to these clubs, seeing that they will do far more to popularise aviation than any amount of air line work carried on chiefly for the benefit of American tourists.

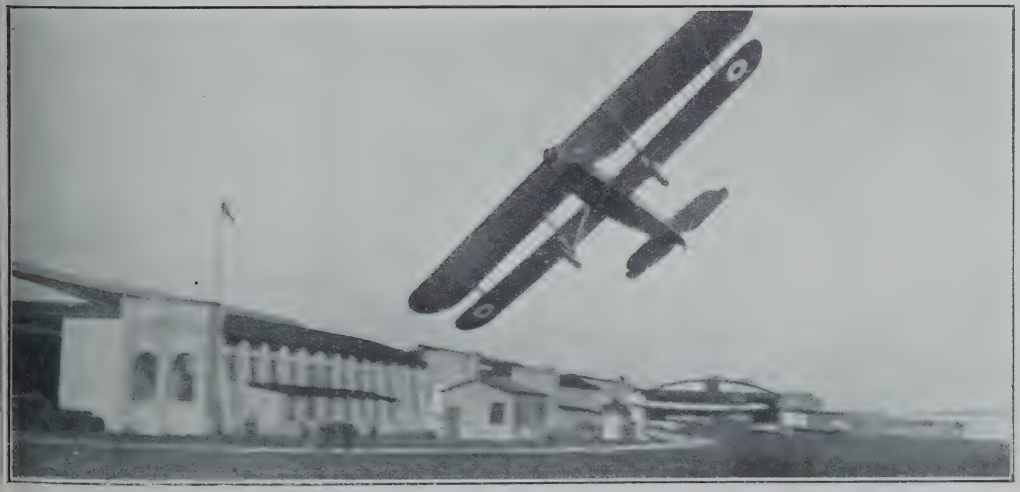
Meteorology.

Vote 9, Meteorological and Miscellaneous Effective Services, absorbs £172,000, of which £37,000 are Appropriations in Aid.

These Appropriations in Aid include £18,400 from the Middle East Department in respect of Iraq, Palestine and Transjordan, £1,826 in fees for supply of meteorological data, weather reports and so forth, and £6,361 as a contribution from Army Votes in respect of meteorological stations maintained for Army purposes.

It is noticeable that the Admiralty, which ought to profit most by the work of the Meteorological Department and ought normally to contribute largely towards it, do not vote a single penny for the purpose. One can only assume that the Navy thinks that it knows all there is to know about meteorology without any outside help. But one would at least expect the Navy to co-operate in some degree.

Actually Meteorological Services themselves only receive £77,000—the same amount as last year, for under this same Vote (as Miscellaneous) come £12,000 for compensation for



AN AIR ESTIMATE.—Mr. P. W. S. Bulman turning low at Brooklands on the Hawker Horsley (Rolls-Royce Condor) day bomber, which has a speed estimated to be some 20% over 100 miles an hour.

losses and £6,500 allowances to Ministers of Religion and £58,300 for telegraphic and telephonic charges and postage abroad. But it should be noted that the actual Headquarters Staff, amounting in all to 132 persons, of the Meteorological Office is maintained out of the Air Ministry Vote and costs £48,948 per annum.

The Air Ministry Vote.

Vote 10 is for the Air Ministry itself, and amounts altogether to £762,000.

This of course is the vote into which Members of Parliament ought to delve if they really want to find out what is the matter with the Air Force. And yet the individual amounts are so small that hardly any money would be saved even if certain departments were abolished altogether.

It is however interesting to notice that the Department of the Secretary of the Air Ministry absorbs far more money than do any of the fighting departments. Including a mere £20,589 for the salaries of the Members of the Air Council itself, which is actually very little, the Secretariat absorbs £319,990—an increase of £16,658 over last year.

As against that the Department of the Chief of the Air Staff, which contains in fact the major portion of the brains and initiative and organising power of the Royal Air Force, only takes £155,765, and that is a decrease of £19,917 as against last year. Evidently the Chief of the Air Staff, Sir Hugh Trenchard, against whom all these offensive newspaper attacks are being made (largely for personal reasons), is determined that at any rate his Department cannot be charged with extravagance.

The Department of the Air Member for Personnel, Sir Philip Game, only costs £50,710, which is a decrease of £1,272.

On the other hand, the Department of the Air Member for Supply and Research, Sir Geoffrey Salmond, costs £143,192, an increase of £11,719. This is the department which could well be weeded out to about one-third of its present strength and made very much more efficient in the process.

One does not for a moment suggest that the fault is Sir Geoffrey Salmond's. Probably Sir Geoffrey knows better than most people where the trouble really lies. And doubtless if he were invested with sufficient power he would get rid of half his Staff and reorganise the rest so that they could do useful work instead of doing harm and blocking progress as they do at present with their petty rivalries and ambitions and intrigues.

The mere sum of £143,000 odd does not matter. It is a comparatively small fraction of the total Air Estimates. But if all Sir Geoffrey Salmond's tame experts were dismissed and all aircraft, engines and equipment were judged purely on their merits by committees of serving officers, the designs of our aircraft would progress very much more rapidly and new machines would be constructed in a fraction of the time which they now take and at a fraction of the present expense.

With all due respect to Sir Geoffrey Salmond and his strenuous efforts to promote efficiency and progress and economy, his department is a blot on the whole Air Ministry. The Secretariat costs a lot of money and its financial people are an infernal nuisance to serving officers, because they are the people who insist on all these little fiddling accounts of every penny that is spent. But they do not definitely endanger our position as an air power as do the technical experts in Sir Geoffrey Salmond's department.

Under the Air Ministry Vote one finds also £14,467 for th Directorate of Civil Aviation, a decrease of £1,095 from las year. The people in this department honestly earn thei money. They work hard for it, and they work intelligentl and earnestly for the good of Aviation.

The Secretariat.

The one thing about the Air Ministry Vote which doe strike one as a positive disgrace is the enormous salaries pai to the Civil Servants in the Secretariat. For example th Secretary of the Air Ministry gets £3,000 a year, against mere £2,415 1s. 8d. paid to Air Chief Marshal Sir Hug Trenchard. The Deputy Secretary gets £2,200 a year, a against £2,068 6s. 8d. paid to Air Marshal Sir John Salmon Three Principal Assistant Secretaries get between £1,200 an £1,500 apiece, which is more than the pay of an Air Comm dore, who only gets £1,113 5s. Eight Assistant Secretarie draw between £1,000 and £1,200 a year apiece, as again £1,104 2s. 6d., the pay of a Group Captain after six years i that rank.

Also there are seventeen Principal Secretaries drawin between £700 and £900 per annum apiece, which is better tha the pay of a Wing Commander. There is a Chief Registra drawing £789 per annum, which is higher than the pay of Wing Commander with eight years in that rank.

There is a Director of Accounts with £1,420 per annun which is very nearly the pay of an Air Vice-Marshal. The is a Chief Auditor in Egypt with £1,070 per annum, which nearly as much as the pay of an Air Commodore, and the is a Chief Auditor in Iraq with £1,115 per annum.

There is a Director of Contracts with £1,700 per annun almost as much as the pay of an Air Vice-Marshal, and the is a Deputy Director of Contracts with £1,168 per annun And there are whole hosts of minor officials who are vastl better paid than Flying Officers and Flight Lieutenants.

Nobody disputes the need for a Secretariat. And obv ously accounts must be properly kept in a Fighting Servic But anybody who has had any experience of the amount absolutely unnecessary paper work which is inflicted not onl on active service officers but on aircraft constructors and ever body else who has to deal with the Air Ministry will realis that the vast majority of these estimable Civil Servants migl be very much better employed anywhere outside the A Ministry.

Moreover, most of these highly paid officials are permanen Civil Servants who may know a terrific amount of routin paper work and accounts but who know nothing whatev about the requirements of the Air Force or any other Fightin Service. The bulk of their work is done for them by ten porary Civil Servants on miserably inadequate pay, and fro what one can gather there is intense jealousy between th permanent Civil Servants and the temporaries.

In certain departments the temporary Civil Servants are th people on whose genuine knowledge the existence of the d partments depends, and yet every effort is being made by th permanent Civil Servants to learn as much as they can, or a any rate enough to prevent their ignorance being found ou with the idea of ultimately getting rid of the temporar Civil Servants and so consolidating their own position a indispensables.

As a matter of fact in some departments if it were possibl to get rid of the permanent Civil Servants who have bee



AN AIR ESTIMATE.—Another view of the Hawker Horsley (Rolls-Royce Condor). St. George's Hill may be seen in the distance. The ceiling of the Horsley is estimated to be about a hundred times as high.

The "Lions" Share!

Commenting on the wonderful flight by Major Franco from Spain to Buenos Aires, *Flight*, in its issue of Feb. 4, says:—

"That the 'Lions' did their duty and did it well is amply evident: and it is a testimony to their stamina that when the propeller of the rear engine was damaged by the rough seas, the last part of the flight was completed with only one of the engines at work. This must necessarily have meant that after having been run for some 33 hours (a good deal of the time at or near maximum power) one of the "Lions" was then run to its full capacity for the last 100 miles or so, yet apparently it was none the worse for its gruelling test."

This flight by Major Franco—6259 miles in 59 hours 35 mins. flying—has broken records in more than one direction.

Never before has a machine or engine to start to cross the South Atlantic, successfully completed its journey.

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wished onto the Air Ministry by other departments of the State, and if it were possible to give the temporary Civil Servants permanent appointments, the work of those departments would be very much better done and there would be much less of that complicated paper work and quite a good deal of money would be saved, not to mention the saving in time of active service officers employed in administrative work. In fact most of these Civil Servants might well come under the latter part of Vote 11.

Vote 11 is for Half Pay, Pensions and other Non-Effective Services. The gross total is £246,500. Of this the largest amount is £168,000 for Service and Disability Retired Pay and Gratuities of Officers and Nurses. Similar gratuities to Other Ranks amount to £31,500. Pensions, Gratuities and Allowances to Widows and Children amount to £12,600.

Those who wish to study the Air Estimates further can obtain them for 2s. 6d. net from His Majesty's Stationery Office, Kingsway, W.C.2. There is much information to be got from them. Incidentally the Estimates contain sundry appendices which are very valuable. One gives the rates of pay and allowances for officers and other ranks and that is always useful for reference.

With those remarks we may now turn to the Debate. Editorial comments interpolated into the text will be found printed inside brackets so that no innocuous M.P. may be accused of impertinent remarks.—C. G. G.

Sir Samuel Hoare's Speech.

The Air Estimates were introduced to the House of Commons by the Secretary of State for Air, Sir Samuel Hoare, on Thursday, February 25. As an orator Sir Samuel Hoare is not in the direct line of succession of Burke and Sheridan or Fox and Pitt or even of Disraeli and Gladstone. But what he has to say he says plainly and in a business-like way. Every now and then he uses a phrase which deserves to live in history and once in a while, apparently in an endeavour to come down to the level of the majority of his audience, he uses arguments or phrases which are not quite worthy of him. Taking it all round this particular speech of his was one of the best things he has done.

Opening his speech, Sir Samuel Hoare said that the Prime Minister in answer to a question by the leader of the Opposition, Mr. Ramsay Macdonald, early that day, had made it quite clear that the existence of an independent Air Ministry and an Independent Air Force to carry out the air needs of the country was an established part of the programme of every party. He was glad that a statement of that kind had been made, because he was quite sure that the longer the idea remained in existence that the question was an open one, the worse it was for the relations between the three Services and the more difficult it was for the Air Ministry and the Air Force to carry out their already difficult duties.

Very wisely Sir Samuel then referred to the reduction in the Gross Estimates. He pointed out that one of the chief causes was the reduction in the cost of defence in Iraq and Palestine and said that this was to some extent the result of the visit which he and Mr. Amery had made to the Middle East a year ago, but it was still more due to the efficiency of the Air Command under Air Vice-Marshal Sir John Higgins and the Civil Administration under Sir Henry Dobbs, in spite of a long-drawn-out international crisis and threats of war with Turkey. [One is particularly glad to see that Sir John Higgins is at last winning recognition as one of the most able officers that the Army and Air Force has produced. He has had to wait quite a long time for his great opportunity in life, and there is the greater satisfaction in seeing that he has fulfilled the expectations of those who have long recognised his outstanding ability.]

Continuing, Sir Samuel said that the small net increase was due to the formation of additional squadrons and that the increase would have been substantially greater but for the loyal help of the Air Ministry and the Air Staff and the advice of the Colwyn Committee. He stated the Air Ministry's policy in a single sentence thus:

"First of all the duty of providing a Home Defence Force against possible air attack; secondly the duty of carrying out the air work for the Navy and Army, thirdly the duty of providing air garrisons in such parts of the Empire as are suited to them and lastly the duty of developing Empire air communications, and generally of expanding the knowledge and the practice of air into all sections of the community in the country here."

As to the cost of the Air Force he said that he was amazed by the misleading charges of extravagance that had been levelled against the Air Ministry and he added that he would deal fully and fairly with them before the debate closed.

Referring to the programme for a Home Defence Force of Squadrons, he said that 25 of these were already formed and three more would be added in the course of the financial year. This meant that though in 1922 there were only three squadrons available for Home Defence at the end of 1927 there would be 28. And he added "To-day we are in the position of being the second greatest Air Power in the World, leaving out of account for the moment the Air Force of Russia, about which I have no official knowledge. But even so we are still in an inferiority of rather less than one to two compared with our nearest neighbour."

Lieut.-Cdr. Kenworthy interpolated the remark that our inferiority was one to three, as we could not count our squadrons in India and Iraq in comparing our Home Defence Force with the force of France.

Sir Samuel Hoare said that he was not comparing our Home Defence Force with the Metropolitan Air Force of our nearest neighbour but he was comparing the total forces.

The question was whether it was justifiable for the Government and the country to take a longer period for the completion of the air programme because of the new situation created by the Locarno Treaty. He was not so rash as to prophesy on the subject but he did believe that at the very lowest estimate the signing of the Treaty under which the great Powers of Europe guaranteed each other against unwarranted aggression made the risk of war in the near future less than it was before. To that extent it surely justified us in taking a somewhat longer period for the completion of our expansion programme. [With this view one entirely agrees. We are not at all likely to have to fight France. There is no Germany to fight. And a combination of the signatories to the Locarno Treaty is quite capable of tackling anything Russia can do in the near future.]

Referring to the slowing down of the programme Sir Samuel said that he did not deny for a moment that it would make it more difficult and probably more expensive to carry out the programme in the long run, but that there were reasons why the Air Force should not altogether regret a slight slowing down. It would give an opportunity for more intensive training, when they were not overwhelmed with problems of quantitive expansion, for raising the already high standard of the quality of the Air Force, as for example in accuracy of bombing, formation flying and getting off the ground more quickly.

He then referred to the long-distance flying which the R.A.F. had been doing, such as the flight in September by five Vickers Virginias of No. 9 Bombing Squadron from Manston to Leuchars and back and by eight Virginias of 58 Squadron from Worthy Down to Leuchars with full Service load. The distance was about 800 miles and some machines spent 12½ hours continuously in the air. He also referred to the flight by Supermarine Southampton flying boats from Calshot to Belfast Loch and back again, together with fleet exercises, in bad weather, the total covered by all the machines being about 10,000 miles.

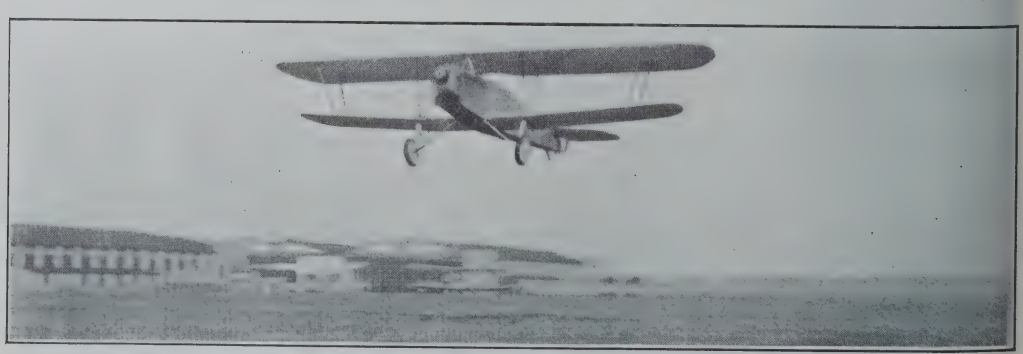
The Industry's Position.

Referring to the Aircraft Industry he said that obviously it was essential to the expansion of the Air Force in any time of emergency. It was in a difficult position, because unlike any other great industry it was almost entirely dependent on the orders of a single Government department. But, in spite of alarmist statements, he did not think that this slowing down meant ruin and disaster to the Industry as a whole.

The House would be interested to know that the orders that the Industry would receive and the payments which would be made to it would represent the third largest amount paid to it since the War and would be £3,500,000 more than it was in 1922. He would make his business, by spreading the orders as far as possible, to keep together as many key men as he could in the various firms.

Another way in which he thought he could help the Industry would be to withdraw many of the restrictions which made it impossible for British aircraft and engine firms to sell anything other than obsolete types on foreign markets. He had come to the conclusion that it was now both safe and legitimate to enable British firms to sell their newer types in foreign markets a great deal sooner than they had been able to do. He hoped that this would enable the Aircraft Industry to build up markets abroad for British machines and engines—than which there were no better anywhere in the World.

[Here one would remark that British aircraft firms would do very much better if instead of merely selling machines exactly like those which they are compelled to design to Air Ministry specification they would take their courage in both hands and would produce new and original machines according to the most advanced ideas of their own designers, quite free from hindrance by Air Ministry experts. Such machines, as has already been proved by certain of our constructors would be very much better than those which have been subjected



AN ESTIMABLE AEROPLANE.—The Hawker Horsley (Rolls-Royce Condor) flying at Brooklands.


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HAMBLE

the interference of the Air Ministry experts. It is true that many foreign Powers would rather have machines exactly like those approved by the Air Ministry, because they are under the impression that because the Royal Air Force is the best Air Force in the World its equipment must necessarily be also of the best. As a matter of fact the R.A.F. is the best Air Force in the World *in spite* of the Air Ministry's technical departments and not *because* of them. If manufacturers would produce new and improved designs and would have their designs approved by the stress department at Farnborough and would have their workmanship certified by the Aeronautical Inspection Department they would then have the necessary Air Ministry guarantee of quality and could produce the best aircraft in the World. But a manufacturer needs a good deal of pluck and initiative to adopt such a policy. He has got to stand or fall by his own judgment of his chief designer's ability, and cannot shelter behind the Air Ministry's experts as has been done in some cases when things have gone wrong. And he is going to make enemies of those same experts, who will then take every opportunity thereafter of damning his productions. But such enterprise is bound to be successful in the end.]

On the subject of co-operation with the Navy and Army, Sir Samuel said that the Fleet Air Arm is now equipped entirely with post-war types and that its flying personnel was the most efficient anywhere in the World. So far as the Army squadrons were concerned we had maintained the closest co-operation with the Army and with the garrisons in the rest of the Empire. He alluded to a remarkable air operation recently carried out on the North-West Frontier of India, because this was the first occasion on which the Air Force in India had been allowed to operate independently of the support of any ground forces. There had been practically no casualties.

Lieut.-Cdr. Kenworthy inquired about the other side and Sir Samuel replied that the casualties were very small indeed on the other side, much smaller than they would have been in a long drawn out campaign.

Passing on to Empire Air Routes, Sir Samuel said they were just as important on the military side as they were on the civil side, for obviously if we could develop a system of air communications over the Empire it would make it much easier to develop a more mobile Empire defence.

He referred to the flight from Cairo to Nigeria and back, 6,268 miles in eighty flying hours, and said that immense interest had been taken in the flight all along the route. Hundreds of thousands of natives gathered to see the machines and "Emirs in considerable numbers were taken up for joy-rides, some of them with so many clothes that the pilots had to tie ropes round them for fear of some of the articles falling off into the tailplanes." The flight showed that it was possible to bring Nigeria and Egypt within a week by air whereas by car it would take a month and by native transport more than six months. [On this point one would merely remark that as apparently the distance is only 3,000 miles, which is approximately the same as the distance from New York to San Francisco, Cairo and Kano via Khartoum ought to be covered in thirty hours, judging by the daily performance of the American air mail service equipped with very ancient de Havilland aeroplanes and antiquated Liberty engines.]

Sir Samuel announced again the Service flight by four Napier-Fairey III.Ds from Cairo to Cape Town, a distance of 5,289 miles, and stated further that they intended next year to send a formation of flying boats on a long distance cruise, probably to Egypt.

The Civil Side.

On the subject of Civil Aviation Sir Samuel referred to the introduction of new machines with three engines and hoped that before long we should have a through aeroplane route not only from Egypt to India but from London to India and possibly on to Rangoon and Singapore.

Here sundry Honourable Members ejaculated "Ah, Singapore!", whereupon Sir Samuel said that he had no military objective in mind and that the longer an aeroplane route was to be extended the greater was the advantage over other means of transport. He hoped eventually to go on to Australia as well.

As to airships, he said that he saw no reason why before this Parliament came to an end the two new airships should not be flying regularly between London and distant parts of the Empire. [As the new Parliament, barring a revolution of some kind, has about 3½ years to run one does not think that Sir Samuel is unduly optimistic.]

Referring to "The creation of an instructed public opinion upon air questions" and "the necessity of stimulating the air sense of the Nation," Sir Samuel said that they hoped much from the Auxiliary and Special Reserve Squadrons and also from the two organisations, called squadrons, at Oxford and Cambridge.

On the scientific side, Sir Samuel remarked, his advisers told him that we had reached a very important turning point in the development of aeronautical science. For instance, in the problem of the control and stability of the aeroplane [this is a problem which could have been solved with ordinary intelligence and application son seven or eight year ago, immediately after the War].

Sir Samuel also referred to the substitution of metal for wood machines and the boosting and supercharging of engines and the Aut giro, as examples of the research problems which were in process solution.

The subject of Short Service Commissions in the Air Force pr duced the statement from Sir Samuel that the Institute of Mechanic Engineers had agreed to count the training provided in the A Force as part of the training that was necessary to Associates of t Institute.

Service Intrigues.

In conclusion Sir Samuel said that a great part of the time of the A Ministry Staff and its officials had been taken up with meeting t situation created by sudden changes of Government policy, and al with controversies over our air organisations. So far as the contr versies were concerned he hoped that they were ended by the stat ment that the Prime Minister—he understood with the acceptance the leader of the Opposition—made at the beginning of the proce ings that afternoon.

It would make it far less difficult for the Ministry if they cou concentrate their undivided attention on their tasks. The Air For had now an established place in the life of the Nation, an esta lished place in defence, an established place to meet an urge national need. As one of the Service Ministers, from the point view of the three Services generally, he was quite sure that when on all this controversy was cut out of the picture, the relations betwe the three Services would be much closer than ever before.

The Air Ministry would do everything in their power to make th co-operation as close as ever they could and to apply their policy such a way as to secure the greatest possible amount of unity of ou look between the three Services and by that means to combine t keenness of those in the Air Service with the fine traditions a varied experience of the two older forces.

The Debate.

The debate was opened by Major Attlee, like Lord Thomson soldier turned Socialist and mildly pacifist. He asked what was t menace against which he had to defend ourselves and said that seemed to him that what the Air Minister really meant by a Hon Defence Force was a counter-attacking force. He considered bom a very offensive method. He had always found them extreme offensive himself.

He suggested that we were arming against France and that S Samuel Hoare's speech "was informed with the war mind a through" and that it was the "greatest belittling of the work of t Foreign Minister and the Locarno Spirit that he had ever heard the House." To take up the position that someone else had got Air Force and therefore we must have one was national snobbery.

He said that he had received a communication from the Air Leag of the British Empire. He looked through the document because wanted to see who were so immensely interested in the air. He fou Lord Cowdray, who brought oil to his mind, and he noticed the nam of Lord Weir, who was a successful man in bringing forward ne developments of policy which somehow or other brought grist to t mill. He found also those who in their capacity of directors or shar holders could suggest all the material wanted for the Air For He had great suspicion over these concerns unless he could s clearly who was behind them.

He was profoundly sceptical as to the value of what is called a defence and said "I have always understood that the only satisfactio we could have in a matter of danger from the air would be the sati faction of knowing that someone else was getting it in the neck at t same time as we were." He said that he was not prejudiced again the Navy or the Army or the Air Force and he was glad to hear t Prime Minister declare that the Government had no intention putting the Air Force under either of the other Services.

Considering the Estimates for the three Services he said that t amount allocated to each seemed to depend very largely on whi Minister happened to be the stronger, or the best booster, at t moment. He found in the Air Estimates a "Directorate of Oper tions and Intelligence," with 44 persons on its staff, which cost son £24,000. Last year's Army Estimates showed a similar departme costing £54,000 with 64 persons and the Navy's similar departme cost £100,000 with 125 persons. So far as "G" staff was concern the problems of defence was not three but one. Therefore there ough to be only one co-ordinated general staff dealing with them.

[Here Major Attlee shows some ignorance of the precise functio of "G" staff. It is true that there might very well be a co-ordinate Imperial General Staff, and there is in fact some such organisatio But the "G" staff work of each Service is actually highly technic and pertains exclusively to that Service.]

Major Attlee advocated a single recruiting staff for the thr Services [apparently forgetting that if only for the sake of efficien



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THE DE HAVILLAND HABIT.—The famous Victoria Falls on the Zambesi, photographed by Mr. A. B. Elliott from Mr. Cobham's D.H.50 (G-EBFO).

there must be direct competition between the three Services]. He also advocated a unified Staff College for the three Services [forgetting that staff work is highly technical. There is no need for example for a naval officer to know precisely how many motor lorries can be got onto a mile road nor precisely how many aeroplanes of a certain class can be got onto an aerodrome of given dimensions, nor is there any need for a R.A.F. staff officer to know precisely how many ships can be moored in any given harbour. And that sort of thing is the essence of real staff work].

He also advocated a unified medical service.

[Possibly something might be done in unifying medical work but one would hate to trust the nerves of a temperamental pilot to the ordinary naval farrier, and one sees no reason why an R.A.M.C. doctor should have to worry himself with all the special problems of eyesight and blood pressure and nerve reactions in which an R.A.F. doctor has to specialise.]

Major Attlee asked why we should have eight Ministers of the Crown representing the fighting Services. The Chancellor of the Exchequer might adopt the motto "*Divide et impera*" because if there were three heads of the fighting Services he could run off with the bone while they were fighting. He advocated a single Minister of Defence and suggested the Chancellor of the Exchequer for the job, on the grounds that he was a man of war in all departments, accustomed to direct warlike preparations and operations in all three elements. He said that Mr. Churchill had sown his wild oats in all the Services and was now getting more mature, having exchanged the sword for the purse.

Major Attlee also referred to the problem of what to do with Air Force people who were too old for flying. He suggested transfers between the three Services for officers as well as men and said that he was not very much in favour of people who have been in the service of the Crown moving afterwards into private enterprises which supplied the State. [Altogether it was not at all a bad speech. If Major Attlee would study a little more deeply the problems of the Staff and of armament supply he might become quite a valuable Member of the House, even in Opposition.]

DEFENCE FROM A PREDECESSOR.

CAPT. FREDERICK GUEST, who, though a Liberal, was one of the most competent and at the same time agreeable Ministers of the Crown w whom one has had to deal, congratulated Sir Samuel Hoare on admirable paper supplied to the Members with the Estimates. It a model of what a Memorandum should be in its frankness. Ca Guest said that the attacks upon the Ministry in the last few we had been disgraceful in their manner and showed disrespect for of the great Services of the Crown.

It was insulting to a force that it should be the subject of ter such as we had seen in some leading newspapers in the last few da and it ought to be severely reprobated and reprimanded in the Hou

Apart from that these criticisms were very ill-informed. He ask those amateur critics who contemptously called the R.A.F. a "Gro Force" whether they had the slightest idea of the number of du which had been imposed upon and carried out by this little Air For Did these critics think it would be possible to relieve the Taxpa of so many millions of money in Iraq unless the members of R.A.F. could do many more things than fly? Not only there in other parts of the Empire they were doing garrison duty as w as police and flying duties and unless we had a well-organised well-trained force it could not save us money as it was doing.

Those who used the old argument that there were too many per machine did not suggest how many men per machine there sho be. As machines became more reliable fewer men might be ne sary, but to take up now the line of argument that the R.A.F. sho not have so many men per machine showed not only malice ignorance as well.

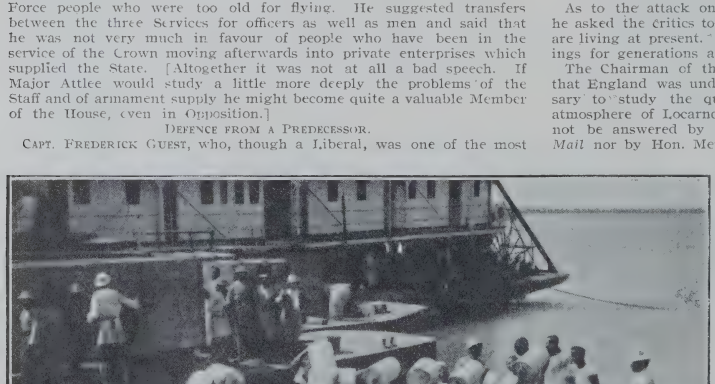
In the Artillery 44 men were needed to put a gun in the field. W should a newspaper say that 50 men per flying machine was too ma

As to the attack on the provision of buildings for the Air For he asked the critics to go and see the old war huts in which the m are living at present. The Army and Navy had had magnificent bu ings for generations and the Air Force must also be properly hous

The Chairman of the Air League of the British Empire had sta that England was undefended. Was that so or not? Time was ne sary to study the question and the present peace caused by atmosphere of Locarno might be an advantage. Such questions co not be answered by amateurs like the editorial staff of *The Da Mail* nor by Hon. Members who sat on his right for when they h the reins of office they carried out the po handed on by their predecessors, and they so because they said that they did not kn sufficient about the subject to make alt tions, and therefore they also were amateur

Continuity of policy was necess Changing Governments seemed free to a main policies. For example, the Air Force almost destroyed after the Armistice and t immediately revived. The Geddes Commit whittled it down to almost nothing, within six months the present programme Home Defence was adopted. A policy needed which would outlast the precarious of any one Parliament.

He submitted that the body which could down such a policy was the Committee Imperial Defence. It was the only body wh



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political and expert minds came together. If we submitted to that body the problem of the continuity of air policy and the nation was kept informed of the results we could have a sound foundation on which to build for a generation together.

[One would like to congratulate Capt. Guest on his speech. His constructive remarks were thoroughly sound and his destructive remarks with special reference to *The Daily Mail's* Rothermerian attacks on the Air Force ought to go far towards destroying whatever harmful influence they may have had on the more intelligent people who read other papers as well as *The Daily Mail*.]

A Former Friend's Attacks.

Major-General Sir Frederick Sykes said that it was impossible to make a reliable comparison between the three Services unless the Estimates for all three could be studied. And he thought it was important that the three Service Estimates should be drawn up in a similar form.

The greatest problem now before the country was the reduction of armaments, and economy in defence, considered with the problem of Imperial foreign policy. Disarmed nations were really favoured as trade competitors against successful armed nations. Neither the Navy nor the Army were obsolete. The Committee of Imperial Defence had done excellent work, but it was not constituted to carry out the work of a joint executive General Staff.

As to the Air Estimates, he frankly disagreed from the policy giving a minute number of skilled men in the air and practically no reserve. The requirements of the Navy and Army were ill filled by the Air Force. The strategical long-range striking force lagged. And true aerial development in experiment, research and civil aviation were dropping further and further behind other countries.

Out of a force, including civilians, of some 45,000, we had only 2,200 qualified pilots, and some 1,000 to 1,200 man hours of work were required per hour of flying.

There were three officials at the Air Ministry for every aeroplane in the Service squadrons. Secretarial services cost 3½ times per head of personnel more than those of the War Office. He complained of the small amount spent on reserves and on research and of the purchase of American engines and of the lack of support of civil aviation and he said that the Auxiliary and Special Reserves were an unnecessary complication in organisation.

He said that the best form of reserve was commercial operations, official and unofficial research, and highly skilled men in factories. He was glad that the Middle East Route was to be made commercial At the same time he said that he hoped that flights and then squadrons and then wings would fly along the established routes, and said that one of the best values before the War was obtained by the R.F.C. from frequent flights, which he had had carried out, between Farnborough and Montrose.

He referred to the reduction by one-third of the money allocated for the purchase of engines, and again criticised the purchase of American engines [omitting to say that the Curtiss engines were bought out of this year's Estimate for a specific purpose which could not then be fulfilled by British engines and that there was no connection between that purchase and the Estimates for 1926-27.] He also criticised the purchase of the Irvin parachutes [omitting to say that the Irvin parachutes had to be bought because the parachute department at the Air Ministry, which is not under the Air Staff at all, failed to do its job properly]. He ended by returning to his old pet scheme for a joint Staff for the three Services.

[As usual, Sir Frederick Sykes' speech showed considerable thought and imagination coupled with that unfortunate lack of practical commonsense which proved so disastrous to his work as G.S.O. with General Henderson in France, as O.C. Flying Services in the Mediterranean, as Chief of the Air Staff in the early days of the Air Ministry, and as Controller-General of Civil Aviation afterwards. One owes Sir Frederick Sykes certain debts of gratitude and one hates to criticise him. He is a man of immense imagination and foresight, he has a vast amount of determination, but, to adopt a popular phrase of to-day, it is almost impossible to "get him down to brass tacks." Either he refuses to give an immediate and definite decision on some important point or he goes and gets himself tied up in side-issues, as for example on the question of American engines and parachutes in this speech, which destroy all the benefits which might have been derived from his really brilliant theoretical ideas. Therefore while he is always worth hearing, simply because other people can get ideas from him which they can develop on practical lines, his criticisms always have to be regarded with the greatest caution lest they should prove utterly misleading.]

The Old Navy's View.

Rear-Admiral Murray Sueter, the first Commanding Officer of the Royal Naval Air Service, joined in congratulating the Air Minister on his presentation of the Estimates, criticising him only on delaying the expansion of the R.A.F. Quoting a speech by Major Attlee on Feb. 18, on the subject of Iraq, when he said that the great danger of the World was the danger of a clash between Asia and Europe, Admiral Sueter said that we were quite wrong in cutting down the air services. They ought to be kept up to the standard laid down by four consecutive Governments. A great Service like the Air Service should have more than a seventh of the total money provided for the defence of the country.

People said that they could not put youngsters into the Air Force because it was unstable. And in regard to the Industry it was worse still. They could not get the best in the Industry if they could not offer inducements to men to go from the Universities to train as aeronautical engineers, or could not get the best apprentices.

He suggested that the Air Ministry might cut out some of the work at Farnborough and give it to the Industry. He believed that we got nothing out of Farnborough but a large expenditure. He recommended that the Air Force should build up a really fine corps of scientific aeronautical engineers.

Admiral Sueter, after having said so much that was wise, then proceeded to lament the dissociation of Mr. Louis Brennan and his helicopter from the Air Ministry. He even suggested that Mr. Brennan might be useful in connection with the Auto-Giro.

[Personally one has a great respect for Mr. Louis Brennan, but rather for his commercial ability in obtaining the necessary finance for his projects than as a practical engineer. His torpedo was wonderfully clever but never really useful. His monorail was also clev but useless. And his helicopter was equally ingenious and of equa little use. In the course of the last thirty or forty years M Brennan must have cost the British Taxpayer quite a lot of mone and although he has apparently made quite a respectable, and doubt well-deserved, living for himself, one cannot discover that t country has derived any practical benefit from him or his inve tions. As somebody remarked the other day, he appears to have genius for inventing things which nobody wants.]

Continuing, Admiral Sueter said a good word for airships genera and advocated a small airship club.

Turning then to the subject of buildings, he said it was disgrace to take up the newspapers and see the bricks that are being hurled the Air Ministry for housing the men properly. The Navy hou their men properly and why should not airmen be housed as w as seamen and guardsmen? The Chief of the Air Staff, Sir Hu Trenchard, understood this matter from A to Z and was to be co gratulated on his policy.

Admiral Sueter also approved of the men having a certain amou of drill just as engine-room artificers had in the Navy. Referring critics who want to break up the Air Force again he said th knew nothing about the air and he quoted the report of an inqu into the U.S. Air Service to the effect that outside of the Air S vices themselves there was not in the Army and Navy a prop appreciation of the importance of Air Power. He also quoted t Finance Committee of the French Chamber, which passed scathi criticism on the deplorable state of the French Naval Air Service a result of mal administration by the Ministry of Marine. He co gratulated the Air Minister on having one of the finest and m efficient Air Forces in the World.

[Altogether a good hearty speech from a man who, in the ma knows what he is talking about, says it, and has done with it.]

Pertinent Questions.

Lieut.-Col. Josiah Wedgwood, Labour Member for Newcastle-Tyne, an officer who has a very distinguished War record in t Flying Services, opened his speech with the very sensible remark th in the days before the War, when discussing Naval Estimates, we kn what ships could beat what and it was possible to determine whet this country was being made safe or not. To-day, discussing Estimates, we did not know whether 25 squadrons or 125 squadrons the Air Force could be regarded as providing safety, so there was air of unreality about these debates.

He said that our only salvation was that we might induce ot nations to do away with a large proportion of their present Services. The Air Minister talked about Locarno and how in c sequence he had been able to spread out his reconstruction of the Arm over a longer period, but why did he not mention the possibil of a Disarmament Conference?

His second point was a question as to what steps the Air Fo were taking in view of the fact that it was superseding vari branches of the older Services. Was the development of the Arm accompanied with "a reduction of expenditure on the atroph branches of the older Services"? He referred especially to Cavalry remarked, "They are as obsolete as the Beefeaters at the To The Air Force and the armoured car are doing the work of the Cavalry."

[Here is where Col. Wedgwood, like so many other enthusia spoils himself by over-statement. He and other fervents of mechan warfare will find that in the next war Cavalry will be all-import because they will be the only human striking force capable of pacing armoured cars and of scattering before aircraft attacks re-forming rapidly after the attack has passed. Over the plains Central Europe, Infantry will not be able to operate except beh fortifications or as a police force in occupied territory.]

Referring to the reduction of British Forces in Palestine he wa to find out whether we were spending more money in Egypt as a tection for the Suez Canal and whether the reduction of our Fo in Palestine was a real reduction or merely a transference from wh we ought to be, in Palestine, to where we ought not to be, in Eg

He also wanted to know whether it was possible to enlist mechanics in Palestine, and to train them to be efficient, the Jews are now settled in Palestine. He was apparently anxious to get population accustomed to defending their own country. And advocated further the gradual association of the people not onl Palestine but of Iraq with the Air Force, so as to train them self-defence as a preliminary to our getting out of those coun and reducing armaments and so economising.

[The idea of Jewish and Iraqi air mechanics defending t countries against the magnificent fighting power of Turkish squ head infantry is really funny. A real square-head Anatolian would walk through a dozen Iraqis or Palestine Jews with his hands. About all they would be able to do would be to pick pockets as he passed. But there is something to be said for ma the more habitable portion of Palestine our chief base for the tection of the Suez Canal. If Jaffa is going to be our great oil for Irak and Persian oil in the future we might just as well mai our great air base if the country round is suitable.]

Lt.-Col. Spender Clay, like others, remarked that the estimates the three Fighting Services ought to be presented simultaneo Each of them looked upon a different foreign nation as its when calculating what funds it wanted. Therefore there was proper co-relation between the three Services. He thought that Secretary for Air must have considerable difficulty in obtaining f in competition with the older Services. He blamed not only Government but every Government for this fact.

Seven or eight years ago we were told that we need not expect for another ten years. That time was rapidly elapsing and Government ought to give a lead as to what is expected of the three vices. He supported various other members in arguing for a Minist Defence. Very sensibly he advocated economies in other directions those of the Fighting Services and he advocated a single depart for the purchase of stores as well as single departments for Chapl Medical Services and Lands and Buildings.

[The remainder of the debate will appear next week, together the discussion in Committee.—Ed.]

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THE SCHNEIDER TROPHY.

The Research Department of the Air Ministry is still doing its very utmost to cramp the style of those desirous of building Schneider racers.

One gathers that Sir Sefton Brancker, who is now in the States, has been given the undignified mission of pleading with the Americans to postpone the event. Verily the impertinence of the Research Department passeth all understanding. But perhaps it may come off, because it is well known that some people get what they want by asking where other people prefer to go without rather than lower themselves.

The natural result of all this is that the impression is getting about in America that all this nonsense is being made in order to hamper the Curtiss racer type, as the following paragraph from *Slipstream* (McCook Field's pet paper) shows.

FOREIGN ENTRIES, MAYBE.

There seems to be a bit of uncertainty as to whether or not the Schneider Cup Race, international classic for seaplanes, will be held next October at Hampton Roads, due to the failure of foreign entries to compete. Foreign countries have made a plea before a recent meeting of the F.A.I. in Paris to have the race postponed, but the United States does not see any reason for doing this. One will recall that the United States, like good sportsmen, failed to claim a forfeit win in 1924 when foreign entries failed to appear at the annual contest for the Schneider Cup trophy. Should America again win the Cup either through forfeit or in an actual contest it will become the permanent property of this country. It is therefore hardly likely that the United States would care to make further concessions. As it stands Great Britain is about definitely decided not to compete unless a postponement is made, although there is some talk that S. E. Saunders Ltd. has volunteered to build several race ships. France and Italy are hedging, and introduced a measure at the recent F.A.I. meeting whereas the contest requirements would specify a 900-lb. useful load. This idea, of course, is nothing more than a scheme to hamper the Curtiss Racer type which foreign nations as yet have found far too speedy. "Ain't they tricky fellers?"

CRASHES, SECRECY AND THE AIR MINISTRY.

One frequently hears it stated that the only aviation events in which the Press, or, at any rate, the Daily Press, takes an interest are crashes. At the last Aero Club dinner, Lt.-Col. Edwardes, of the Air Ministry, stated that if Private Flying for all came into being, there would be a number of crashes which would receive full publicity in the press.

Now this is very largely true, but the reason that the Press devotes so much news to crashes is that Sir Geoffrey Salmond's department at the Air Ministry prevents one from talking about anything else, owing to that department's ideas on secrecy.

One has frequently incurred Sir Geoffrey's displeasure by stating in print something that all connected with aviation, including foreign air attachés, have known all about. On one occasion, some years ago, complete drawings and specifications of the Handley Page Hyderabad appeared in an Italian paper. As the Italians knew all about it, one saw no reason why the British public should not also know something, especially as the machine differed very little from the W.8. Sure enough, as soon as it appeared in print, the Air Ministry became frantic on the telephone, and one was assured by an official of the Air Ministry that "Sir Geoffrey Salmond was exceedingly annoyed." Unfortunately one did not feel so withered up as one should have felt.

This sort of thing has been going on for years. Last year one issued a statement to the Press about a certain machine, the facts of which were well known to most people in aviation. A number of newspapers, requiring verification, rang up the Air Ministry, who denied that there was any truth in the report, though it was subsequently proved in practice to be true.

One wrote to the Secretary of the Air Ministry asking who had denied the report and on what grounds. This was in December, 1924. Promptly by the next post one received a reply stating that the letter was receiving attention. One waited until February, 1925, and as no reply came, one wrote again, and got a reply saying that that letter was receiving attention too. Here, in March, 1926, as no reply has been received, one naturally draws one's own conclusions.

These few examples will show something of the attitude of Sir Geoffrey Salmond's department, or at any rate its effect as an assistance to British Aviation Propaganda.

Incidentally, almost the only things issued voluntary by the Press Section of the Air Ministry are accounts of fatal accidents, and the Secret list, together with a statement of the penalties incurred by infringing that list.—G. D.

AN INTERESTING APPOINTMENT.

Sq. Ldr. R. A. de Haga Haig has been appointed experimental pilot to the Aviation Department of William Beardmore and Co. Ltd., and will start his duties during the present week.

Sq. Ldr. Haig has until recently been Officer Commanding the Experimental Section, R.A.E., at Farnborough, where he has been for the past two years.

He has been a prominent figure in the various competitions during the past years and one can most decidedly congratulate Beardmores on their acquisition. He should have plenty of work on hand with the Rohrbach type boats, and the new triple Rolls-Royce Condor commercial monoplane.

Presumably, on transfer to Scotland, the family MacSealyham will acquire a Scottish growl.—G. D.

AN AMERICAN RECORD IN ENGINE PRODUCTION.

In THE AEROPLANE for Sept. 16, 1925, the registration of the Pratt and Whitney Aircraft Co. of Hartford, Conn., was announced. This company was established by the world-famous manufacturers of precision tools, under the presidency of Mr F. B. Rentschler, and the vice-presidency of Mr. George J Mead, formerly Chief Engineer of the Wright Aeronautical Corporation of Patterson, N.J.

In the short time that has elapsed since then this company has produced a new nine-cylinder radial air-cooled engine, known as the Pratt and Whitney Wasp, which has already completed the U.S. Navy's 50-hour test.

This engine develops about the same horse power as the Liberty, on a reduction of about 200 lbs. in dry weight, which is equivalent to a dry weight per horse power of 1.69 lbs. In the design of the Wasp many innovations have been made which all lead towards dependability and simplicity.

For example, the crankcase has been divided transversely on the centre line, the two halves being held together by the cylinder flanges, and large through bolts, in such a way as to make the front and rear sections interchangeable.

Substantial, heat-treated aluminium pistons, with large floating wrist pins, are used. All the connecting rods are of I section, to provide for visual inspection, which would not be possible with tubular construction. The crankshaft is short and robust, and is carried on three sets of roller bearings. An unusual feature is the extension of the crank webs on the side opposite the pin to form part of the counterweights.

The valve gear is entirely enclosed. The rocker arms are carried in housings which are cast integral with the cylinder heads. The push rods are enclosed in tubes, and extremely long valve guides are used, which not only carry away the heat rapidly, but also provide sufficient guiding area to eliminate scored valve stems.

All the accessories are mounted on the back of the engine. These include two Scintilla magnetos, a Stromberg carburettor, the fuel and oil pumps, two synchroniser drives, the tachometer drive, and the relief valve. An Eclipse momentum starter is carried between and just above the two magnetos.

Apart from the major design, all the parts which transmit the power of the engine have very high factors of safety. The size of all the parts is noteworthy, in view of the extremely light weight per horse power of the engine, indicating that low weight per horse power has been secured by simplified arrangement rather than by weakening any important parts. Aluminium has been used extensively.

An improved cylinder construction has been used incorporating very large valves, together with an unusual amount of cooling surface, both on the cylinder and on the exhaust valve housings. A General Electric type of supercharger is built into the rear of the engine.

The Wasp is extremely clean in external appearance, and as all accessories are in the rear, cowling may not be necessary.

In view of the fact that the design of this engine was only begun in August, 1925, and within a period of six months the first of the type has been constructed, put through a preliminary test, and has now completed the standard U.S. Navy 50-hour test, the designer, Mr. G. J. Mead, and the constructing firm deserve every congratulation.

VICKERS ALL-METAL MONPLANES.

Reports from Brooklands state that an all-metal Wibault monoplane with a Bristol Jupiter engine has been flying there recently and putting up quite remarkable climbs. This machine is understood to be the property of Vickers Ltd. and the information at Brooklands is that the great armament firm has taken over the British rights of the Wibault.

It is stated that a number of Vickers-built Wibaults constructed entirely of duralumin, which is made by Vickers Ltd., have been ordered by a foreign Power. These will all be equipped with Bristol Jupiter engines of the latest type. There is much satisfaction in knowing that a foreign power of importance, while approving a French design, should be prepared to pay for British material and workmanship and should specify a British engine.

A BELGIAN MILITARY COMPETITION.

A competition for single and two-seater military aircraft is being held in Brussels under the auspices of the Belgian Army.

So far it is known that seven types of aircraft will participate, these being:—(1) Armstrong Ajax (Siddeley Jaguar engine), pilot Capt. Bennett Baggs; (2) Potez XXV (Gnôme-Rhône Jupiter engine), pilot, M. Favreau; (3) Caudron C.101 (500 h.p. Hispano-Suiza engine), pilot, M. Van Laere; (4) Koolhoven F.K.31 (Gnôme-Rhône Jupiter engine), pilots, MM. Aler and Van Vloten; (5) Nieuport-Delage 42C.1 (500 h.p. Hispano-Suiza engine), pilot, M. Sadi Lecointe; (6) Dewoitine D.19C.1 (450 h.p. Hispano-Suiza engine), and (7) Dewoitine D.21C.1 (500 h.p. Hispano-Suiza engine), both to be piloted by M. Doret.

THE FIRST AEROPLANE TO FLY FROM LONDON TO CAPE TOWN.

The D.H. Type 50.J

ENGINE 385 H.P. ARMSTRONG SIDDELEY JAGUAR



On Wednesday, February 17th, Mr. Alan J. Cobham, flying a D.H. Type 50.J Aeroplane arrived at Cape Town having flown from London, 8,020 miles in 94 flying hours.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
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THE ROYAL AIR FORCE.

The London Gazette

Feb. 23.

General Duties Branch.—The following Flg. Offs. are granted perm. comns. in this rank (Jan. 1) :—F. Kirk, G. V. Wheatley. Plt. Off. on probation F. C. Rowland is confirmed in rank (Feb. 5).

The following Flg. Offs. are transferred to the Reserve, Class A :—L. H. Ridley (Feb. 25); W. J. Walsh (Feb. 26). Flg. Off. J. Durward is transferred to the Reserve, Class B, in that rank and is granted permission to retain the rank of Flt. Lt. (Dec. 7, 1925). (Substituted for the notification in the Gazette of Dec. 8, 1925.)

Sq. Ldr. A. W. C. V. Parr is placed on the retired list at his own request (Feb. 24); Plt. Off. G. D. Venables relinquishes his S.S. comn. on account of ill-health (Feb. 24); Plt. Off. W. E. Nicholls resigns his S.S. comn. (Feb. 24); the S.S. comn. of Plt. Off. on probation G. S. J. Bowman is terminated on cessation of duty (Feb. 5).

Flg. Off. L. A. I. Firmin (Lt., 4th Bn. The Buffs, T.A.) is dismissed the service by sentence of General Court Martial (Feb. 11).

Stores Branch.—The following Flg. Offs. are granted perm. comns. in this rank (Feb. 24) :—E. G. Keeping, A. J. Redman, D.F.C., D. A. W. Sugden, H. E. Young. The following Flg. Offs. are confirmed in their appointments in the Stores Branch and are granted perm. comns. in this rank (Feb. 24) :—F. H. Bedford, M.C., M.M., R. M. Taylor, M.C.

Medical Branch.—Flg. Off. R. H. Stanbridge is promoted to the rank of Flt. Lt. (Feb. 19); Flt. Lt. H. E. Flavelle (Capt., Army Dental Corps), relinquishes his temp. comn. on return to Army duty (Jan. 29).

Reserve of Air Force Officers.—E. R. Meads is granted a comn. in Class AA, General Duties Branch, as a Plt. Off. on probation (Feb. 8).

Appointments.

Week ending Mar. 1.

General Duties Branch.—Air Commodore C. L. N. Newall, C.M.G., C.B.E., A.M., to R.A.F. Depot Supernumerary pending posting to the Air Ministry, 1/3.

Group Captain R. C. M. Pink, C.B.E., to H.Q., Air Defences of Great Britain, for Air Staff duties, 6/3.

Squadron Leaders A. J. Butler, O.B.E., M.C., A.F.C., to No. 4 F.T.S., Egypt, 10/2. R. Graham, D.S.O., D.S.C., D.F.C., to R.A.F. Staff College, Andover, 1/3. B. E. Baker, D.S.O., M.C., A.F.C., to Exp. Section, R.A.E., S. Farnborough, 1/3. J. H. Simpson, to Air Ministry, 1/3. H. A. Tweedie, O.B.E., A.F.C., to No. 2 Arm. Car Coy., Palestine, 13/2.

Flight Lieutenants J. R. I. Scambler, A.F.C., to No. 2 Wing H.Q., India, 10/1. H. W. Clayton, to No. 14 Sqdn., Palestine, 29/1. E. B. Grenfell, A.F.C., to Station H.Q., Northolt, 16/2. W. B. Everton, to I.A.A.D., Henlow, 11/3. E. F. Waring, D.F.C., to Air Ministry, 15/3. G. L. Ormerod, to Station H.Q., Duxford, 16/2. C. D. Palmer, to No. 3 Group H.Q., Spittlegate, 26/2.

Flying Officers C. Ayling, to No. 23 Sqdn., Henlow, 8/3. H. Little, to School of T.T. (Men), Manston, 19/2. J. W. Bell, D.S.M., to R.A.F. Depot, 1/3. S. J. Stocks, to remain at No. 7 Sqdn. instead of to Night Flying Flight as previously notified. R. W. E. Bryant, to No. 111 Sqdn., Duxford, 19/2. A. E. Golds, to Night Flying Flight, Biggin Hill, 14/2. A. E. Thompson, to R.A.F. Depot on transfer to Home Estab., 29/1. F. C. Marsh, to No. 20 Sqdn., India, 20/2. C. S. Whellock, to H.Q., Palestine, 1/2. A. Lees, to No. 2 Arm. Car Coy., Palestine, 29/1. C. H. Jennings-Bramly, to No. 4 Arm. Car Coy., Iraq, 1/2.

Pilot Officers P. H. Nicholls, to No. 20 Sqdn., India, instead of to Aircraft Depot, as previously notified, 15/12. H. A. Evans-Evans, to No. 14 Sqdn., Palestine, 29/1. K. C. Baker, to Heliopolis Details, Egypt, 9/2. V. J. Sofiano, to No. 216 Sqdn., Egypt, 10/2. L. Dalton-Morris, to Night Flying Flight, Biggin Hill, 24/2. J. C. Noel, to No. 111 Sqdn., Duxford, 19/2.

Medical Branch.—Flight Lieutenant (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., to R.A.F. Depot, 8/3. Flying Officers E. J. Jenkins, to No. 7 Sqdn., Bircham Newton, 24/2. J. P. Hederman and E. J. Mockler, M.B., to Research Laboratory and M.O.S. of I., Hampstead, on appointment to S.S. Comns., for short course, 23/2. R. L. C. Fisher, M.B., to I.A.A.D., Henlow, 18/2.

Stores Branch.—Flight Lieutenants A. Jukes, M.B.E., to Air Ministry, 1/3. E. W. Crosbie, to No. 1 Group H.Q., Kidbrooke, 1/3. K. D. G. Collier, to R.A.F. Base, Gosport, 24/2. H. E. T. Crocker, to Arm. and Gunnery School, Eastchurch, 25/2. H. J. Barnham, to Station H.Q., Spittlegate, 22/2. Flying Officers E. V. Bashford, to No. 502 Ulster Sqdn., Aldergrove, 23/2. R. D. Lambert, to No. 43 Sqdn., Henlow, 9/2. E. V. E. Andrewartha, to C. and M. Party, Cattewater, 19/2. J. McCarthy, to H.Q., Egypt, 10/2.

The King's Levee.

H.M. the King held a Levée at St. James' Palace, on Feb. 23.

Among those in attendance upon His Majesty was Air Marshal Sir John Salmond, Principal Air Aide-de-Camp. Group Captain L. W. B. Rees, Aide-de-Camp in Waiting, Air Chief Marshal Sir Hugh Trenchard, Wing Cdr. J. H. S. Tyssen, and Flt. Lt. G. W. Hemming were also present.

The following officers of the Royal Air Force were among those presented to His Majesty by the Secretary of State for Air :—

Webb-Bowen, Air Vice-Marshal, T.I., C.B., C.M.G., on promotion; Brookman, Flg. Off. H. G., on first appointment; Lancaster, Flg. Off. W. N., on first appointment; Lumsden, Flg. Off. C. G. H., on first appointment; Kingston-McCloughry, Flt. Lt. E., D.S.O., D.F.C., on first appointment; Moffatt, Flt. Lt. A. McR., on first appointment; Openshaw, Flt. Lt. E. R., on first appointment; Stainer, Flg. Off. P., on first appointment; Tait, Flt. Lt. V. H., on first appointment; Wakefield, Flt. Lt. W. W. on first appointment.

The R.A.F. Memorial Fund.

The balance sheet and statement of accounts, together with a complete list of the year's donations to the Fund, appear in the Sixth Annual Report of the Royal Air Force Memorial Fund, which covers the period from Jan. 1 to Dec. 31, 1925.

The nett proceeds of the R.A.F. Display in June, 1925 amounted to £6,335 2s. 2d., over £1,040 more than the previous year. The R.A.F. share of the profits of the Royal Tournament amounted to £1,700 0s. 0d. Other large sums were received from collections made at Parade Services on Armistice Day, £342 18s. 11d., the proceeds from football activities, forwarded by the A.O.C., Cranwell, £200, the annual contribution of the R.A.F. Station, Henlow, £114 1s. 3d.

The 10 per cent. on the published price of the R.A.F. Pocket Book and Diary realised £75 5s.

The Fund is particularly well supported by serving officers and other ranks of the R.A.F., and besides a number of good sums realised by sports and entertainments in the Service, R.A.F. Units have subscribed £1,401 8s. 3d. during the year.

The sale of reproductions of wireless pictures by Flt. Lt. Verpilleux amounted to £150.

The Fund still requires a great deal of money to carry out all the work on which it is engaged.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident at Calshot to a Fairey III D of the Royal Air Force Base, Calshot, on Feb. 26, Flt. Lt. Geoffrey William Hemming, the pilot of the aircraft, and Flg. Off. Robert Collins, were seriously injured.

Flt. Lt. Hemming died of his injuries shortly afterwards.

The Air Ministry regrets to announce that as the result of the flying accident which occurred at Calshot on Feb. 26, Flg. Off. Robert Collins, the passenger of the aircraft, died of injuries on Feb. 28.

A Rescue.

A *Reuter* message from Boulogne, in *The Times* of Feb. 25, states :—

The Boulogne trawler *Marie Louise Marguerite*, Master Germe, has returned to port with three British naval officers whom she had picked up, forming the crew of a seaplane which had fallen into the sea.

The weather was very bad at the time, and the rescue operations were very difficult. Immediately after the officers had been taken off the seaplane sank. In the course of the rescue work a member of the trawler's crew was seriously injured by a violent lurch of the vessel which sent him flying across the deck. On entering Boulogne harbour the trawler landed the three British officers and the injured sailor, who was taken to hospital.

A *Central News* message states that the seaplane was a Fairey III D from the School of Naval Co-operation, R.A.F., Lee-on-Solent, and the crew consisted of Flg. Off. L. G. A. Kirchner, R.A.F., and two Naval Officers.

The Fleet Air Arm.

The Naval Estimates, published on Feb. 27, include the following announcement by the First Lord of the Admiralty in the course of his explanatory statement :—

Naval Air Work.

The number of Naval and Marine officers trained and employed as pilots now amounts to 70, and 42 are still under training. The first of the Naval officers attached to the Royal Air Force under the scheme approved by H.M. Government in 1923 have now completed their full training as pilots, and have been appointed for duty afloat. The appreciation of the Board of Admiralty has been expressed at the very satisfactory results obtained during their training. Arrangements have been made for all executive officers to undergo a short course in elementary naval aeronautics in an aircraft carrier, either during the last year of their service as midshipman or at the first opportunity subsequently as junior commissioned officer. Such arrangements will, it is hoped, increase the interest taken by junior officers in the work of the Fleet Air Arm, and will be of considerable value to them later, even should they not decide to specialise in air duties.

All the R.A.F. aircraft hands for general duties in the Fleet Air Arm have been replaced by R.N. ratings. These substitutions have resulted in economies in that they have enabled the total complements of aircraft carriers to be substantially reduced, since the naval ratings are available for and capable of undertaking ships' duties which the replaced airmen were not trained to perform.

An appreciable economy has been effected by accepting, for the time being, a lower percentage of aircraft reserves.

Special courses in aerial navigation, meteorology and photography for selected R.N. observers have been instituted, and a programme of practices in aerial fighting under sea conditions has been introduced for all Fleet Air Arm pilots and observers.

Steady progress in the use of aircraft by the Fleet is indicated by reports received from sea.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. flight from Cairo to Cape Town, which is being undertaken by a special R.A.F. Cape Flight, under the command of Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., R.A.F., left Cairo at 07.00 hours on Mar. 1, and arrived at Aswan at noon. One machine damaged a wheel on landing, and the other three proceeded without it.

The Cape Flight is equipped with Fairey III.Ds fitted with Napier engines.

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GLOSTER III, Fastest British Machine over 100 and 200 kilos.
WINNERS OF THE AERIAL DERBY, 1921, 1922, 1923.
RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion Engine.)

THE AEROPLANE CLUBS.

Flying Reports for Week ending Feb. 28 :—

THE LONDON AEROPLANE CLUB.

The following Members had flying instruction :—D. P. H. Esler, Sir John Rhodes, N. Jones, H. R. Presland, R. P. Cooper, A. H. M. Lees, J. Barros, J. S. M. Michie, R. C. Presland, G. N. Howe, E. D'E. Moss, L. Anderson, R. Malcolm, S. O. Bradshaw, F. S. Adams, F. C. Elford, D. Kittell, S. D. Durkan, W. E. P. Johnson, E. L. Brough, A. P. Hunt, J. H. Saffery, E. A. Cook, T. H. O. Richardson, C. Quirk, A. R. Ogston, K. V. Wright, F. W. Eady, B. B. Tucker.

The following Members flew alone :—Mrs. S. C. Eliott-Lynn, Major Beaumont, C. H. Craig.

There is still only one machine available and the total flying time for the week was 26 hours. The total flying for the month of February was 68 hrs. (dual 55 hrs. 35 mins., solo 12 hrs. 25 mins.).

The delivery of the new D.H. Moth to replace G-EBLU, which was written off, is promised for the end of the month. All efforts to acquire another machine to carry on in the meantime have failed.

In view of the recent donation from the Petroleum Distributing Companies the London Aeroplane Club has placed an order with the De Havilland Aircraft Co. Ltd. for a third D.H. Moth, of which delivery is promised in April.

Towards the cost of this machine the following donations have been promised :—Petroleum Distributing Companies £200, Mr. E. S. Jones £150, Major K. M. Beaumont £20, Mr. W. Hay £20, V. H. Doree £20, Mrs. S. C. Eliott-Lynn £10.

Members wishing to assist with donations towards the purchase of this machine are requested to send their names to the Secretary, London Aeroplane Club, 3, Clifford Street, London, W.1.

THE LANCASHIRE AERO CLUB.

The weather has permitted flying on most days this week. G-EBLY and G-EBMQ being the machines flown.

Mr. Neville T. Stack, who commenced his duties on Wednesday, gave instruction to :—A Goodfellow (20 mins.), C. Agar (1 hr. 40 mins.), A. Macnair (1 hr. 25 mins.), M. Lacayo (20 mins.), B. Smith (1 hr. 25 mins.), J. Leeming (1 hr. 15 mins.), S. Harper (20 mins.), A. Wade (1 hr. 15 mins.), H. Hardy (20 mins.), C. Parker (30 mins.), R. Colley (15 mins.), L. Slater (20 mins.), P. Michelson (15 mins.), T. Wilkinson (40 mins.), A. Goodyear (15 mins.), S. Crabtree (15 mins.), D. Dyson (20 mins.), R. Williams (25 mins.), D. Tummers (25 mins.).

Mr. Scholes gave dual to the following :—A. Macnair (25 mins.), R. Williams (10 mins.), F. Davison (30 mins.), S. Crabtree (30 mins.), J. Leeming (40 mins.).

Mr. Cantrill gave A. Goodyear 20 mins. dual.

Solo flights by A. Goodfellow, 40 mins. M. Lacayo, 40 mins. T. Cantrill, 15 mins.

Tests occupied 1 hr. Total dual 14 hrs. 15 mins. Total solo, 1 hr. 35 mins. Total time flown, 16 hrs. 50 mins.

THE NEWCASTLE-UPON-TYNE AERO CLUB.

Total time flown by members, 16 hrs. 15 mins., made up as follows :—Dual, 12.30; Solo, 1.30; Pilot Members, 1.45; Passenger, 30 mins.

Dual, with Major Packman, was carried out by Mrs. Marcks, Miss Leathart, Messrs. MacMillan, Shaw, Wardill, L. Smith, Sandilands, Twine, C. Thompson, W. Todd, J. H. Johnstone, and R. Whitfield.

Solo, Miss Leathart and Mr. MacMillan.

Pilot Members' Solo, Mr. R. N. Thompson, Mr. N. S. Todd, both of whom carried passengers.

Mrs. W. B. Ellis was the only passenger carried during the week, going up, with Major Packman, originally for 15 mins., but requesting, at the expiration of this time, a further quarter hour, and on being asked by Major Packman if she would like a loop, replied, "Yes, one," which she had, much to the surprise of her son and grandson, who were on the ground. Mrs. Ellis stated on landing that she had thoroughly enjoyed it.

The total number of flights during the month of February was 129 and the hours flown 68¼, all but six hours had been completed on LX.

Ten members have been taught to fly and six have now obtained their certificates.

As the Club has had to operate on one machine only during the past two months, it is not possible for members who have reached the solo stage to be launched so as to enable them to carry out sufficient practice to "pass out," two or more machines being absolutely necessary to allow of pilots being trained up to the obtaining of their Licences.

Thanks to the generosity of the Petrol Distributing firms, and local promises of assistance, it appears that better times are ahead, however.

On Wednesday, Mr. MacMillan was launched solus, putting up a very good performance during three flights, though one of these was the cause of some alarm, the wind changing completely round from East to West and it was feared that Mr. MacMillan had not noticed it. His attention was drawn to the matter by one of the many signals used and he made a perfect landing.

Miss C. R. Leathart went off solo after a short dual flight, and flew round very nicely, but misjudged her landing, the machine turning over on touching the ground. The hardworking LX, on which all instruction has been carried out to date, will now have a rest, though it is hoped that the repairs can be carried out at the aerodrome in order to save time.

It had been arranged that Major Packman should go to Stag Lane to bring up LY, on Wednesday night, which he did. A successful journey from London to Newcastle was accomplished, in spite of very bad weather conditions, the visibility being bad throughout the flight necessitating flying at between 200 and 300 feet the whole way.

He arrived safely, having made good time, and bringing messages from Mr. Perrin, from Stag Lane, the Lord Mayor of Leeds and Professor Brodetski, Chairman of the Yorkshire Club. These letters were despatched to the city by motor-cyclist on arrival, it being too late for the Lord Mayor of Newcastle and the Chairman of the Club to be present at the Aerodrome on account of engagements.

Sunday brought forth glorious sunshine and one of the most interesting days since the beginning of flying at Cramlington was enjoyed by a large number of members.

A large number of hours and much energy had been spent during the week in efforts to start the Blackburne engine of Mr. Ellis's Gnosspelius Gull, without success. Mr. Lancaster Parker had been invited to come up to fly the machine for the first time. Mr. Ellis had been anxious to fly it himself, but the obstinate engine prevented this being done. Mr. Parker's presence must have impressed the engine, for it started obediently when he took charge of the operations.

Running off straight from the tarmac everyone was surprised to see the machine take-off after what was considered to be quite a short run, as it was understood that he meant to taxi round the aerodrome to run up the engine, which has been thoroughly overhauled, many of the parts being new. He made one large circuit and a perfect landing.

During the period of the flight Mr. Ellis went off to get his flying kit and others went for cameras. Major Packman asked if he might have a flight soon, as he had a number of pupils waiting for dual, and Mr. Ellis sportingly told him to take it right away. This he did, handling the machine well and turned to return to the aerodrome, but suddenly the nose of the machine went down, and a splutter of the engine was heard. It appeared that he had gone into a small pine wood, but this was not so, as a perfect landing had been made in a field beyond it. The cause was that he had taken off with about a teaspoonful of petrol, the tank being perfectly dry.

It took fourteen members to push the Gull over the fields and lift it over hedges back to the aerodrome, and they found it very hard work though the machine was empty. So everyone has great respect for the wonderful little 5-6 Blackburne engine now.

Considering that it would be necessary to remove the wings to get it home, Major Packman flew over with Mr. Brown as passenger and the latter dropped a bag containing the necessary tools near to the machine. As the "bomber" was subjected to some leg-pulling regarding his aim, it is feared that there will be difficulty in obtaining volunteers to salve future machines if tools are to be dropped, as he will doubtless wish to prove that he can find his target next time.

THE YORKSHIRE AEROPLANE CLUB.

The Yorkshire Club would appear to be in danger of reverting to the Secret List in view of the lack of reports. However, flying instruction has been proceeding steadily if slowly.

Flying hours—Dual, 5 hrs. 47 mins.; Solo, 20 mins.; Total, 6 hrs. 7 mins.

The following members have had dual instruction during the week : Messrs. D. D. Little, McAlman, Swift, Barnes, Smith, Barraclough and Lax.

Mr. Kenworthy had a short flight of 10 mins. on Sunday.

Up to the present members have only found it convenient to turn out during the week-end and the figures above only represent Sunday's times. With the improvement in weather more members are turning up and very shortly we should be working at full bore.

G-EBLS appears to have a rooted objection to Mr. D. D. Little, for on three consecutive occasions on which he has got into the machine the engine developed a mysterious miss. However, G-EBLS condescended to take him up for a few minutes, and then in disgust blew out a plug.

We hope to have three members off solo within the next ten days, given decent weather and reasonable luck, for we have recently been plagued with very thick weather.

On Friday we were visited by Major Packman and his ground engineer abroad *Bernicia* (copiously bespattered with Stag Lane mud) en route for Newcastle. They landed at 14.15 hrs. and after refilling and lunch left for Newcastle at 16.00 hrs.

MR. COBHAM'S DASH HOME.

On Friday, Feb. 26, Mr. Cobham, Mr. Elliott, and Mr. Emmott left Cape Town on a high-speed flight home; they are due at Croydon on Friday. They reached Kimberley in 6½ hours.

On Feb. 27 they flew to Bulawayo and just as they arrived a terrific storm burst over the aerodrome in his honour. Presumably Mr. Cobham replied or retaliated.

On the Sunday they failed to take off owing to the state of the aerodrome after the downpour.

On Mar. 1, they took off successfully, and after landing at Broken Hill, in Northern Rhodesia, continued to N'dda. Thus he has covered 2,000 miles of very difficult country in four days.

THE KARACHI-CROYDON FLIGHT.

A *Reuter* message from Karachi, dated Mar. 1, in *The Times* of Mar. 2, states :—

Flt. Lt. Oliver and Flg. Off. Brooks left here at 2 o'clock this morning on an attempt to fly to England in five days. The start of the flight was difficult owing to a thick fog.

They landed seven miles from the landing ground at Pasni, 250 miles from Karachi, with a fault in the rear petrol tank. A sandstorm then delayed them until Tuesday at 06.00 hrs.

SCIENCE AND ART.

Anybody with a few minutes to spare and in the neighbourhood of Bond Street should go into the Fine Art Society's Galleries, 148, New Bond Street, and see Lt.-Col. Mervyn O'Gorman's exhibition of lacquer work and linocuts, which, unfortunately, closes on Mar. 6.

Looking at the clean lines of his linocuts, one can imagine what the artist in him must have suffered during his seven years as Superintendent of the Royal Aircraft Establishment, although one imagines that it was this period of his career that inspired the particularly nasty, nightmare-gargoyle that figures in one of the linocuts, and also as a panel on the larger of the two lacquered screens. The Air Ministry must look just like that in an artist's nightmare.

The lacquer work is very beautiful, particularly the smallest of three tables which has in it the rare vivid blue that is found in Tut-Ankh-Amen's chair in the Cairo Museum.

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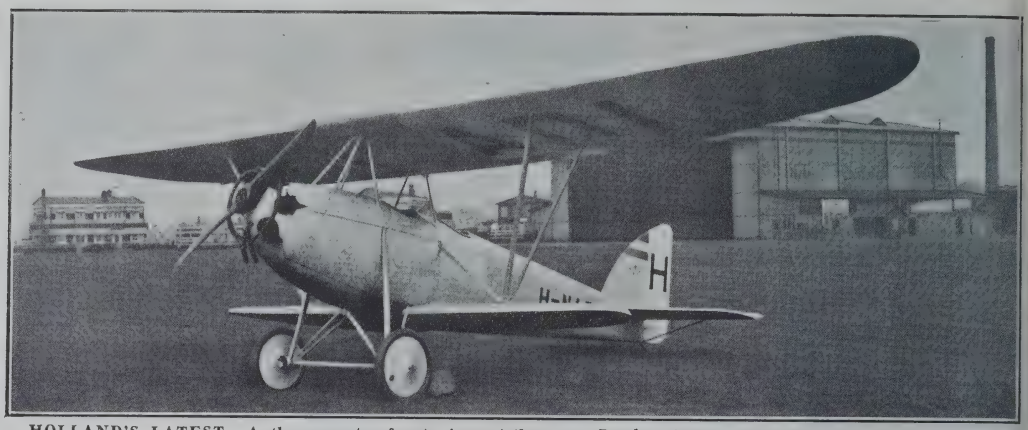
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THE NEW PANDER TWO-SEATER BIPLANE.



HOLLAND'S LATEST.—A three-quarter front view of the new Pander type " E " biplane, or " sesquiplan " (45 h.p. Anzani engine).

On Feb. 21, Lieut. Elkerbout, of the Royal Dutch Navy, tested the first Pander school and sporting two-seater biplane (45 h.p. Anzani engine) at Rotterdam. The results of the tests were very successful, it being found that no adjustments of any kind were necessary, and subsequently several passengers, including M. Pander senior, flew in the machine.

A maximum speed of 125 km.p.h. was attained, and at a cruising speed of 115/120 km.p.h.; the petrol consumption worked out at 14½ litres per hour.

The new Pander biplane, known as the type " E," and constructed by the Construction d'Aeroplanes " Pander," of La Haye, Holland, is a " sesquiplan." The top plane is in two pieces, and is of the semi-cantilever, thick-section type. It consists of two box spars of spruce and three-ply, with wing ribs of three-ply with poplar stiffening strips. The centre portion, for a width of about four feet, is entirely ply-covered, as is the entire leading edge, as far back as the front spar. The wing is subsequently fabric-covered.

In the plywood-covered centre portion are situated the two petrol tanks, each holding 6.5 gallons. As the petrol consumption at 75 m.p.h. is about 3.25 gals. per hour, the radius of action of the machine is about 300 miles.

The top plane, of 33 ft. span, is mounted on the fuselage, on an inverted Vee cabane, and interplane struts of Vee form unite the top and bottom planes. The wing section is constant between the struts with a maximum thickness of about 12 inches. From the struts to the wing-tips, the wing tapers both in chord and thickness, so that the tip section is only 4 inches thick.

The bottom wing, of 16 ft. 6 in. span, is built up in a similar manner to the top plane, except that only one box spar is used. One strut slopes down from the top longeron of the fuselage to the point of attachment of the Vee strut on the bottom plane.

The fuselage is of oval section and is constructed in two portions. The front portion is built up of welded steel tubes and is covered with removable aluminium panels. The rear half from just behind the rear seat consists of seven laminate wooden formers on four spruce longerons, and is covered wi three-ply.

The three-ply-covered fin is built integral with the fuselag The tail plane is of wood and three-ply construction, and built in two parts, each half being attached to the fusela by three bolts and a streamline steel tube strut. The rudd and elevators are built up of steel tube welded to sheet-ste ribs. The hinges are of bronze, turning in steel strips. Th tail skid is steerable and is sprung with a spiral spring.

The pilot and passenger cockpits are in tandem and a equipped with dual control of the " joy-stick " type. Th rudder control is by pedals.

In the back cockpit is a special switch enabling the i structor to disconnect the front controls. The engine, 45 h.p., seven-cylinder radial, is attached to the fuselage t four easily accessible bolts, and the machine is so designe that any radial engine up to 60 h.p. may be fitted.

All the engine controls are mounted in one unit, which ca be easily removed from the fuselage with the cables an tubes. The oil and petrol lines consist of flexible copp tubing which has given very satisfactory results. The o tank is situated immediately behind the engine.

The undercarriage consists of two Vees, the front le being attached to the top longeron and the back legs to th bottom longeron. The front legs are braced transversely b an additional inverted Vee. The axle is suspended on rubb cord shock-absorber. The general arrangement of the unde carriage can be seen in the attached photograph.

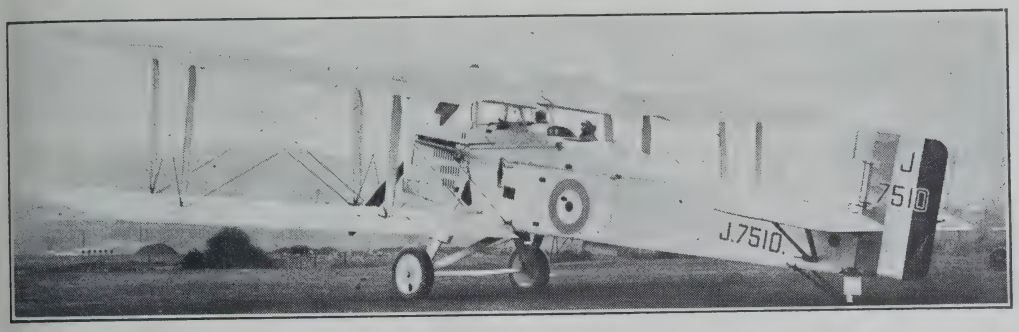
The finish of the machine is outstanding, a feature tha was particularly noticeable in the first Pander monoplane tha was exhibited at the Paris Show in 1924, and, in spite hard and continuous flying, the machine was still perfe when it visited Croydon and Lympne in 1925.

All external parts are varnished with three coats of gre Valspar varnish with the exception of the fabric covering the wings and tail plane. These are doped with Titanine re



THE NEW PANDER BIPLANE.—A three-quarter rear view of the two-seater Pander sesquiplan, which has been produced as a school or sporting aircraft.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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and finished with two coats of aluminium-nitro finish. The aluminium cowling is polished and covered with one coat of transparent varnish. It may be noted that with the exception of the rudder and elevators there is no fabric covering in the slipstream of the airscrew.

SPECIFICATION.

Span, top plane ... 33 ft. 0 in.	Total area of main planes 190.2 sq. ft.
Span, bottom plane 16 ft. 6 ins.	Weight, empty 702 lbs.
Height 3 ft. 7 ins.	Weight, loaded with 4 hours' petrol ... 1,180 lbs.
Length 20 ft. 0 in.	Loading, per sq. ft. ...6.2 lbs.
Area of top plane 144 sq. ft.	Loading, per h.p. ... 20 lbs.
Area of bottom plane 35.5 sq. ft.	Speed, max. 78 m.p.h.
Area of ailerons ...10.7 sq. ft.	Speed, min. 38.5 m.p.h.
	Climb to 3,000 ft. ... 7¾ mins.
	Ceiling 11,500 ft.

THE SOUTH AFRICAN JUNKERS PROPOSAL.

As the result of adverse publicity, the organisers of the scheme to introduce a German air transport company into South Africa have explained that the company will receive no subsidy from the German Government and that the only grant it will receive will be the £8,000 from the South African Government.

It is stated that in order to avoid loss the company will have to make £22,000 yearly, and that it is estimated that the income from passengers, mail and freight will yield £1,000 per month. The company hopes to make good the deficiency out of extras and has determined to take the risk.

Also it is stated that every attempt has been made to induce British firms to interest themselves in aviation in South Africa. It is only after realising the futility of further negotiations that the German interests have been brought into the field.

It is quite understandable that no British firm would be interested in a proposition such as is outlined above. To make £10,000 in *extras* in addition to running a regular service full up every journey, seems to be unnatural.

One knows that one British firm at least went to a considerable amount of trouble to submit a scheme for an air service, following on the conclusion of the experimental three-months' service operated last year by the Government, between Durban and Cape Town. They even went so far as to study the meteorological conditions along the route, and in their proposal told the South African Government more about their weather than they knew themselves.

Apart from the regrettable position of using German equipment in a British Dominion, it is feared that a failure is inevitable, thus leaving a further bad taste in the mouths of the Africander for aviation in general. A country that so far has not spent a penny on aircraft equipment in spite of possessing an efficient but small Air Force, would be wiser either to increase its niggardly £8,000 or continue to ignore aviation altogether.

SPAIN-ARGENTINA.

The Dornier Wal flying-boat, fitted with two 450 h.p. Napier Lion engines, and used by Commandante Franco on his flight from Spain to South America, has been presented to Argentina by the Spanish Government.

From this it would appear that Commandante Franco's journey has come to an end and it is reported that he and his companions will return to Spain on the Spanish destroyer *Alcedo*, which formed part of the Naval patrol during the flight across the South Atlantic.

With this flight, as with all other noteworthy flights that have taken place since as far as can be remembered, Wakefield's Castrol oil was used exclusively. It is satisfactory to note that although this flight was essentially Spanish and the machine used was of German design and Italian construction, several things British were instrumental in bringing the flight to a successful conclusion. Napier engines, Titanine dope, Marconi wireless gear, Castrol oil, B.T.H. magnetos, all formed part of the essential equipment or construction.

The Royal Aero Club has received the following telegram from the Royal Aero Club of Spain in reply to its message of congratulation :—

"We wish to express our profound appreciation of your kind message."

At the Banquet held in Madrid on Thursday, Feb. 11, 1926, to celebrate the Spanish Trans-Atlantic Flight, the Royal Aero Club was represented by Capt. H. H. Square.

The "Ne Plus Ultra" is equipped with a Marconi A.D.6 Aircraft telephone transmitter and receiver of the type which has been adopted as the standard wireless telephone equipment for British civil aircraft, and a direction-finding equipment for navigational purposes.

Reports received during the progress of the flight show that the apparatus has proved of great value to the aviators. A message sent from Las Palmas reads as follows :—

"The direction finder worked marvellously. I have received bearings with the direction finder at a distance of 700 kilometres . . ."

Another message stated that :—

"In approaching Las Palmas the aviators asked for constant signal from the wireless station there as the visibility in the air was bad and it assisted them greatly to take frequent bearings."

During the progress of the flight Spanish warships kept in touch with the aviators giving them signals for direction finding from time to time, when, on the long stretches over the ocean, these signals were more useful to them than those from more distant stations.

Arrangements were also made with the associated Marconi companies in South America for every assistance to be given in matters of communication and in sending signals for direction-finding.

The Dornier Wal is an all-metal machine, and this fact rendered the installation of D.F. gear somewhat more difficult than in the case of a timber-built aircraft, as the near presence of the closed electrical circuit formed by the metal structure adversely affects the receptive capacity of the aerial receiving loops which are necessary for directive work. The receptive capacity of the loops depends on the product of area of loop by number of turns, and it is therefore desirable to keep this product as large as possible. But the loops have to be capable of withstanding very considerable wind pressures, vibrations and shocks, and when, as in this case, they have to be supported well clear of the metal structure, it becomes exceedingly difficult to make a satisfactory loop consisting of many turns.

The Dornier Wal was therefore fitted with loops of the single turn type, but of the greatest practical area. Two fore and aft loops are arranged symmetrically on each side of the hull and coupled in series, and a single transferer loop was mounted in the plane of the wing.

The actual receptive power of these loops is less than that of the usual four used on wooden aircraft, and to give the range required the Standard Marconi D.F. receiver was modified by increasing the overall magnification. This involved using a 12-valve amplifier divided into two units. The first unit contains six stages of high frequency amplification and a detector valve. The second unit contains an oscillator valve, two stages of intermediate frequency amplification, a detector valve and a low frequency amplifying valve. Dull emitter valves of the Marconi D.E.V. and D.E.Q. type are used, the total filament current required being only 2.4 amperes at 8 volts.

The radio-goniometer and high frequency unit are of the standard type supplied by the Marconi Co. for aircraft and are arranged to work over a range of 600 to 1,000 metres.

The results obtained on the flight were entirely satisfactory and accurate bearings were obtained from a distance of 700 km. from Las Palmas, which was reached under conditions of very poor visibility.

NEW WRIGHT ENGINEERS.

The Wright Aeronautical Corporation, of Paterson, N.J., producers of the well-known air and water-cooled engines bearing their name, has recruited three new engineers as from Jan. 1, 1926.

Mr. E. T. Jones has taken up the duties of chief power plant engineer in place of Mr. C. F. Taylor, who has resigned, to engage in aircraft engine research at the Massachusetts Institute of Technology. Mr. Jones was formerly Chief of the power-plant section at McCook Field.

Since leaving Cornell University in 1911, he has been working with the Thomas Morse Aircraft Corporation, with the Signal Corps, U.S. Army before the war, with the U.S. Army Air Service during the war, and as power plant engineer of McCook Field from 1919-1922, and subsequently as chief power plant engineer at the same establishment from 1922-1925. While at McCook Field he carried out some of the most important developments in aircraft engines, and gathered around him a staff of particularly able engineers, two of whom, Mr. Heron and Mr. Moorhouse, have also joined the staff of the Wright Corporation.

Mr. S. D. Heron has joined in the capacity of engineer in charge of air-cooled engine design. Mr. Heron, who was born and educated in England, has been actively engaged in air-cooled engine design since 1912, when he began work with the firm of Armstrong-Whitworth Ltd. In 1915 he joined the Royal Aircraft Factory as air-cooled engine designer, and in 1917 rejoined the staff of Armstrong-Whitworth Ltd. In 1918 he returned to the Royal Aircraft Establishment as research and test engineer.

In 1921 he joined the staff of McCook Field, as chief of the air-cooled branch of the power-plant section, where he remained until he joined the Wright Aeronautical Corporation.

Mr. Moorhouse, who has also joined the company, produced, some eighteen months ago, a small, two-cylinder, air-cooled, light aeroplane engine. This showed such promise that it has been taken over by the Wright Company, who have placed it on the market.



Looping photographs by courtesy of "Flight."

THE Boulton & Paul Bugle with Napier Lion Engines. Entirely of Metal Construction.





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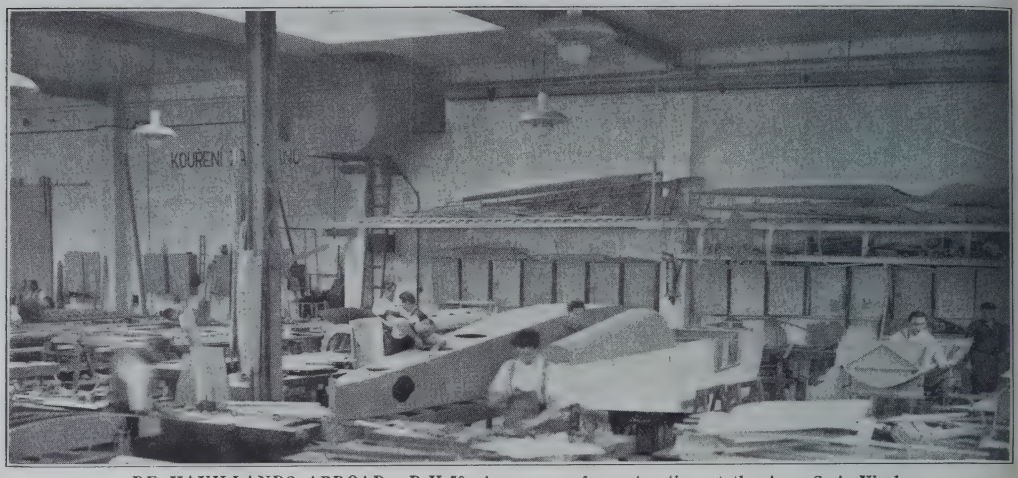
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THE AERO COMPANY OF PRAGUE.



DE HAVILLANDS ABROAD.—D.H.50s in course of construction at the Aero Co.'s Works.

The Aero Company, of Prague, which has recently undertaken, under license from the De Havilland Aircraft Co. Ltd., to construct D.H.50s for the Czecho-Slovakian Government's Civil Air Services, is one of the most progressive of Continental aircraft firms. It was founded in 1919, and has, as Chairman and chief shareholder, Dr. Kabes, a prominent lawyer of Prague. The firm's works, as may be gathered from some of the illustrations here reproduced, are modern, well equipped, and on a fairly large scale. The office staff employed number 80, and the workmen 600, and on the basis of an eight-hour day the factory is capable of an output of 350 aircraft per annum.

In 1925, their actual output was 115 new machines, 115 reconditioned machines, and over 1,000 airscrews. These latter were supplied not only in Czecho-Slovakia, but also to Dutch, French, and other foreign customers, and machines built at these works hold four World's Records. Their products include school, fighter, bomber and commercial types, in very considerable variety. One of their recent products is a twin-engined bomber, fitted with Maybach engines, which carries a total load of 1,500 kg. (3,300 lbs.), of which half (750 kg. 1,650 lbs.) are bombs, climbs to 3,000 m. (9,840 ft.) in 32 mins, and has a speed of 150 km.h. (93 m.p.h.)—by no means a bad performance for 500 h.p. The machine is said to fly excellently on one engine.

The D.H.50s which they are now producing differ from those known in this country in having the Walter-built B.M.W. engine of 240 h.p., instead of the familiar Puma. The drawings for these machines were completed on Dec. 15, 1925 the first machine was flown on Feb. 11, and seven machines will have been completed by the beginning of March—which must be considered remarkably quick progress with an unfamiliar type of machine.

In addition to building aeroplanes, the Aero Works manufacture a good many items of equipment, including petro pumps and instruments.

GREEK AIR FORCE ORGANISATION.

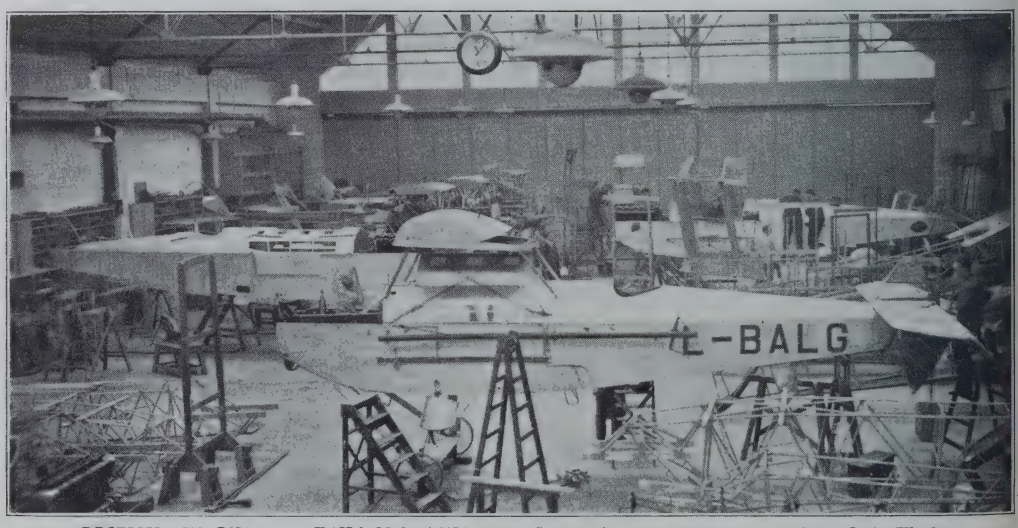
Colonel the Master of Sempill has been appointed Technical Air Adviser to the Greek Government.

He will shortly fly the first Velos torpedo and bombing seaplane turned out by the Aircraft Factory at Phaleron, which is being operated by the Blackburn Aeroplane and Motor Co Ltd

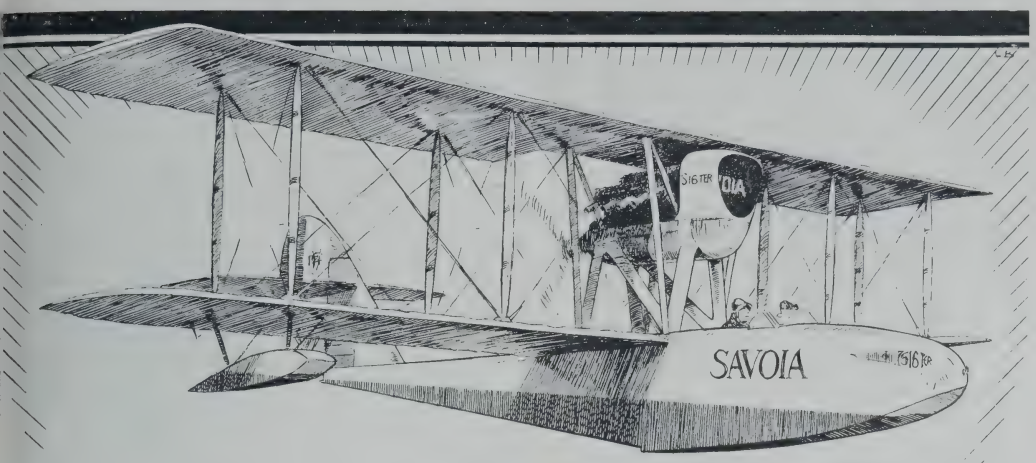
The first flight will be made in the presence of General Pangalos.

AERIAL SURVEY.

Mr. C. Acton Dodds, Secretary of Air Survey Co., Ltd. 3, Copthall Buildings, E.C.2, notifies the fact that Mr. Ronald Kemp, Managing Director of the firm, has recently secured a contract for air survey work from the Government of the Federated Malay States. The work on this contract will follow the completion of the work which has just begun for the Sarawak Government. Mr. Kemp has cabled to say that he hopes to arrive in England about the end of April.



BRITISH DESIGNS IN CZECHO-SLOVAKIA.—D.H.50s nearing completion in the Aero Co.'s Works.



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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 14; Wednesday, 14; Thursday, 15; Friday, 14; Saturday, 13; Sunday, 0.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 46, passengers 147, freight 9 tons.

AIR UNION:

Paris—London: Machines 24, passengers 65, freight 9½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 18, freight 1 ton.

PRIVATE:

Mr. Bennett's Baggs one Siskin from Brussels.

Total number of trips by British Machines, 47, carrying 147 passengers. Foreign Machines, 34, carrying 83 passengers.

Comparative Figures:

Week ending Feb. 28:

Machines, 81; Passengers, 230; Crews, 101; Total personnel, 331.

Corresponding week, 1925:

Machines, 74; Passengers, 134; Crews, 89; Total personnel, 223.

Corresponding week, 1924:

Machines, 46; Passengers, 38; Crews, 72; Total personnel, 110.

Corresponding week, 1923:

Machines, 53; Passengers, 164; Crews, 102; Total personnel, 266.

Corresponding week, 1922:

Machines, 45; Passengers, 81; Crews, 74; Total personnel, 155.

Corresponding week, 1921:

Machines, 30; Passengers, 32; Crews, 38; Total personnel, 70.

Croydon Notes.

Sunday services are to be resumed at Croydon. This, of course, refers to air services, the church variety never having been suspended—or started so far as one knows.

Imperial Airways Ltd. state that there is no immediate intention to increase or reduce the London-Paris fares, as has been stated. The London-Paris fare is £5 5s. single and £10 return. The Paris-London fare, however, is increased to 700 francs single and 1,300 francs return. This is not an increase, but simply an alteration owing to the heavy fall of the franc. (This, of course, has nothing to do with the heavy fall of our own Frank on the Autogiro in Paris, which was nothing like so heavy as the fall of the franc.)

The Air Union is increasing its fares, or, rather, is not increasing them, in the same manner.

Croydon has decided that the pet name for the Bristol Bloodhound shall be the Blood Orange, and so it shall be. At the moment of writing the Jupiter " of the latest type " (won't Sir G. Salmond's department be pleased at the way one refrains from adding I to V and so giving away the secret type number to hordes of lurking spies), has done 191 hrs. 56 mins., and has covered 21,256 miles, without any engine replacements whatever, and the average petrol consumption (Shell, of course), is 21.9 gallons per hour.

An example of the keenness displayed by the Bristol Company and the good organisation displayed in this test must be given. Last Thursday afternoon, Mr. Barnard was taxying the Blood Orange out onto the aerodrome when the tail-skid caught in a groove at the side of one of the tarmac platforms. When the machine turned, the tail-skid failed to come out, with the result that the tail piece was so severely wrenched that the A.I.D. decreed that it must be rebuilt.

The Bristol people got to work at once and the tail was rebuilt so that the machine could carry on first thing the next morning. One of the most remarkable things about the Jupiter is the complete absence of vibration.

The Hampstead, with the Jaguars, has been flying on the route again in the hands of a number of pilots. One gathers that the new tail piece still lacks something. Passengers who have flown in the machine state that it is quite comfortable when the two side engines only are running, but that when the centre one is turned on the vibration is somewhat marked.

A.D.C. Aircraft are very busy. Mr. Perry made fifteen test flights last week on D.H.9s, Nimbus D.H.9s, Martinsyde A.D.C.1s, Avro Airdiscos, Avro Lucifers, and Bristol Fighters.

In the shed there is much activity on machines and engines, besides which a batch of Fiats for motor-boats is being prepared.

Friday is expected to be a busy day as we expect to welcome Flt. Lt. Oliver from Karachi and Mr. Cobham from Cape Town, after which we proceed to Farnborough to get passed as Airworthy.—G. D.

GERMAN CIVIL AVIATION.

On the resumption of German air line traffic on Apr. 1, th Deutsche Lufthansa Gesellschaft, the new company that h been formed by the amalgamation of the old Deutsche Ae Lloyd and Junkers firms, will operate 42 air lines.

This network of lines to be operated does not differ large from that operated by the old companies, except that ove lapping will be eliminated, notably between Berlin an Munich. In central Germany it is proposed to shift som of the importance of Leipzig to Halle, a prospect that h given rise to considerable indignation in Leipzig.

According to the provisional programme for 1926, onl three lines will pass through Leipzig, whereas seven are t pass through Halle. The Reich Minister of Communicatio and Finance, and the Saxon Premier, have received telegran of protest from various public bodies and organisations i Leipzig against this slight on a city regarded as the econom centre of central Germany.

The estimated number of 42 lines includes lines connecting u with foreign systems, and is still dependent, therefore, on th outcome of the negotiations in Paris over the restrictions o German aviation. Among the new lines contemplated is one fro Berlin to the Rhineland, presumably Cologne, which, if th necessary facilities are forthcoming, will be connected t Paris in co-operation with a French company.

Another proposed line is the Dresden-Prague-Vienna rout which, with French co-operation, will connect Paris an London and Berlin with Prague-Vienna-Budapest-Belgrad Bucharest-Constantinople and Angora.

The route from Berlin to Stockholm and Helsingfors wi use Stettin instead of Dantzig, where passengers will chang into seaplanes.

An improvement in the Berlin-Moscow service is arrange whereby the entire journey will be completed in one day, i stead of enduring the overnight break at Königsberg, as b fore.

When traffic is resumed it is proposed to start at 02.00 hou from the Tempelhofer field, and, after stops at Dantzi Königsberg, Kovno and Smolensk, to arrive at Moscow in th afternoon.

On Mar. 30, arrangements will be made by Imperial Ai ways, to connect up with this service. Machines leavin Moscow at 02.00 hours, will arrive at Berlin at 18.00 hour The flight to London will be made next day, arriving a Croydon at 16.30 hours. A similar service will be run in th reverse direction. The distance between London and Mo cow is 1,650 miles.

This appears to be the first step in the scheme by which is hoped to run a service, with the aid of night flying, fro London to Peking in roughly four days. [But who is in suc a hurry to get to Peking?—ED.]

AN AUSTRALIA-JAVA AIR SERVICE.

The Managing Director of Western Australian Airways Ltd Major N. Brearley, has requested the Dutch East India Government to grant him a concession for the exploitation o air services between Java and Australia. He has stated th the proposed service would be a weekly one for mails and pa sengers. The route would be from Sourabaya, via Bima, t Port Darwin, from which machines would continue to Perth Sydney and Melbourne.

The Dutch Government has sent the application to a speci committee for consideration, but no decision regarding th Australian company's request will be reached before th Government has received the proposals of the K.L.M. (Roy Dutch Air Company).

This is a reasonable proposition. It is within the realm of practical politics. Such a line would be a section of th England-Australia Air Route. And it is put up by Norma Brearley, who may safely be regarded as the most successfu of the World's pioneers of air lines.

A BELGIAN CONGO EXTENSION.

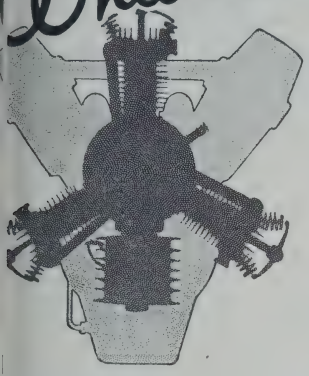
On Feb. 12, the extension of the Kinshasa-Luebo servic of the Belgian S.A.B.E.N.A., to Gulé, near Elizabethville, wa opened.

The first machine, a Handley Page W.8F. piloted by M Roger, completed the double journey, of more than 2,20 miles, in less than four days. Hitherto the journey from Kin shasa to Elizabethville, by existing means of transport, ha taken three months.

This service will now operate regularly in order to connec with incoming and outgoing steamers at Boma.

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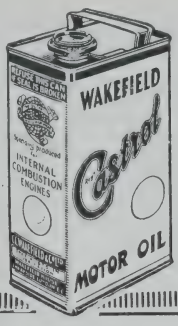
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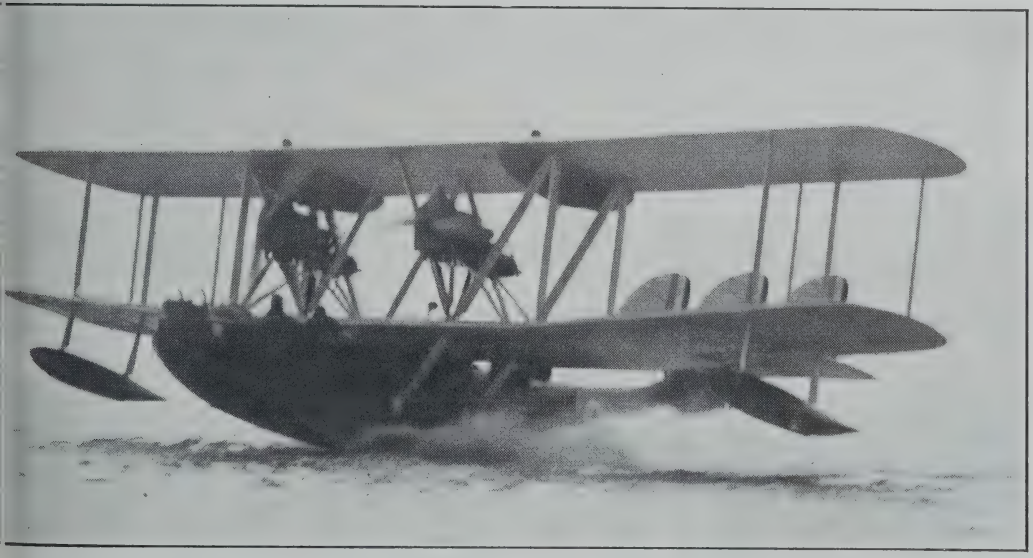
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AIR AFFAIRS IN PARLIAMENT.

THE STATUS OF THE R.A.F.

In the House of Commons on Feb. 25, Mr. Ramsay MacDonald (*by Private Notice*) asked the Prime Minister whether he can inform the House before to-day's Debate whether the Government have any intention of raising afresh, by inquiry or otherwise, the question of the independent status of the Air Force and Air Ministry?

The Prime Minister: I think it essential to announce that, in accordance with the policy of successive Administrations, the Government have no intention of re-opening the question of a separate Air arm and Air Ministry. We intend to pursue the organisation of Imperial Defence on the existing basis of three co-equal Services. It is in the interests of the Fighting Services that controversy upon this subject should now cease. We are convinced that the way to secure the higher co-ordination in our Defence machinery, indispensable to full efficiency and, indeed, to economy, lies not in the abolition of any one of the three established arms of His Majesty's Forces, but in combined action between all three through the machinery of the Committee of Imperial Defence and the agency of the recently instituted Committee of Chiefs of Staff. We are sure that we can rely upon all concerned to devote themselves loyally and wholeheartedly to this end.

R.A.F. EQUIPMENT.

In the House of Commons on Feb. 22, in reply to a question by Sir F. Sykes, the Secretary of State for Air said that the present strength of the R.A.F. was approximately the equivalent of 56 squadrons. Of these 28 were equipped with aircraft and engines of post-war design and two others were now in course of being so equipped. The remaining squadrons were equipped with aircraft and engines of types designed during the War, there being to-day no Service aircraft of pre-war design in use.

In reply to a supplementary question by Sir F. Sykes, Sir Samuel Hoare said that all the R.A.F. Squadrons in India at the present time were equipped with aircraft and engines of types designed during the War.

SARAFAND HOSPITAL.

In the House of Commons on Feb. 24, in reply to a question by Col. Day, the Secretary of State for Air said that the difficulties of hospital accommodation at Sarafand were being overcome by the conversion of existing buildings into a new hospital. The work was due for completion by Mar. 31.

GOSPORT BARRACKS.

In the House of Commons on Feb. 24, in reply to a question by Col. Day the Secretary of State for Air said that following the Report of the Director of Medical Services, R.A.F., for 1924 a comprehensive scheme for the reconstruction of Gosport Barracks had been prepared, but had been postponed in view of the high cost. In the meanwhile the conditions, particularly with regard to ventilation, had been improved.

MORTGAGES AND CHARGES.

Metal Propellers Ltd.—First mortgage and mortgage, both dated Feb. 11, 1926, to secure £3,000 and £600 respectively, charged on certain properties in Thornton Heath. Holders: Commercial Union Assurance Co. Ltd., 24, 25 and 26, Cornhill, E.C.; A. H. Allen, "Nortons," Lingfield; and R. J. Manser, The Lodge, Haling Park Road, Croydon.

SATISFACTIONS.

Central Aircraft Co. Ltd.—Satisfaction in full on Jan 30, 1926, of debenture dated Aug. 28, 1925, securing £1,000.

Hewlett and Blondeau Ltd.—Satisfaction in full on Jan. 9, 1926, of four charges, dated June 30, 1914, July 27, 1915, Nov. 10, 1916, and Sept. 28, 1917, securing all moneys due or to become due respectively. (Notices filed Jan. 26, 1926)

PERSONAL NOTICES.

DEATHS.

BAIRSTOW.—On Feb. 26, at Ardengair, Home Park Road, Wimbledon, S.W.19, Eleanor Mary Bairstow, wife of Prof. Leonard Bairstow, aged 41.

COLLINS.—At Haslar Hospital, on Feb. 28, as the result of a flying accident, Robert Collins, Flg. Off., R.A.F.

Mr. Collins joined the R.A.F. as a Plt. Off. on June 10, 1922, and was posted to No. 2 F.T.S., Netheravon, for a course of flying instruction. In November of the same year he was posted to No. 100 Sqdn. and from there to the R.A.F. Base, Calshot, in July, 1923. He was promoted to the rank of Flg. Off. in December, 1923, and was posted to No. 480 (Coastal Reconnaissance) Flight in October, 1923. In November, 1925, he was appointed to the Marine Aircraft Experimental Establishment at Felixstowe

HEMMING.—On Feb. 26, at Calshot, as the result of a flying accident, Flt. Lt. Geoffrey William Hemming, D.S.C., R.A.F.

Flt. Lt. Hemming served with distinction in the R.N.A.S. and R.A.F. during the War 1914-18 and was awarded the Distinguished Service Cross in November, 1917, and the Order of Chevalier of the Crown of Belgium in February, 1918. He was promoted to the rank of Flt. Lt. in January, 1925. In November, 1920, he was posted to No. 4 Sqdn., Farnborough, where he remained until May, 1922, when he joined the Irish Flight at Collinstown. When this Flight was disbanded he was posted to No. 2 Sqdn., Manston, and from there went in August, 1922, to the Marine Aircraft Experimental Establishment at Felixstowe. He was posted to the R.A.F. Base at Calshot in February of last year.

BIRTHS.

NICHOLAS.—On Feb. 27, at "The Cottage," Stratford Road, Salisbury, to Vera, wife of Flg. Off. J. F. Nicholas, R.A.F. (Lieut., R.N., Retired)—a son (Geoffrey).

FRY.—On Feb 28, 1926, to the wife of Flt. Lt. W. Mayes Fry, R.A.F.—a son.

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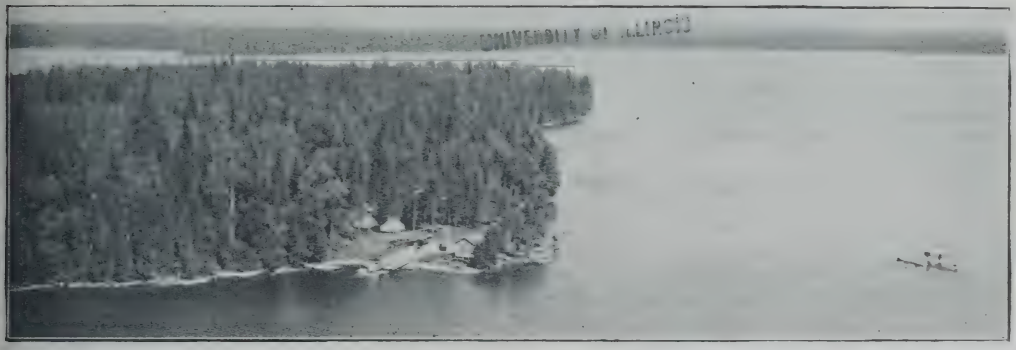
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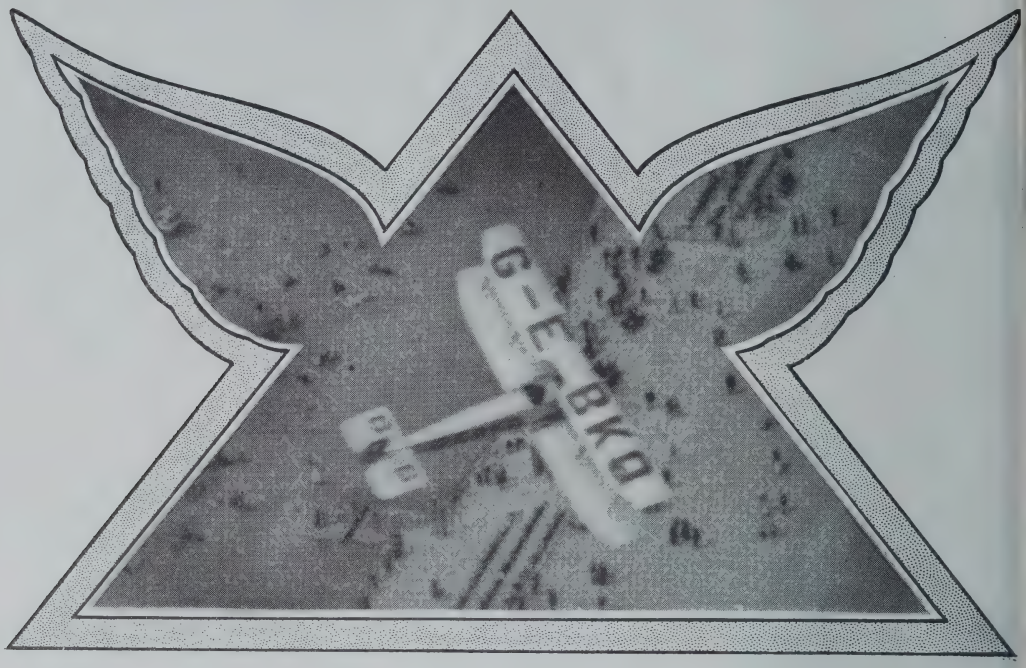
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MAR. 10, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX.

No. 10.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE AIR ESTIMATES.—III.

In this issue of THE AEROPLANE appears the balance of the first debate on the Air Estimates and a very brief précis of the discussion in Committee on Monday night last. Those who have taken the trouble to follow the discussion will have perceived that nothing of great moment has been produced by the debate. The general feeling of the House, among all parties, seems to be that it is a pity that Sir Samuel Hoare has been compelled to cut down expenditure for the financial year 1926-27, but that it cannot be helped and there is nothing to be done about it.

As for the debates themselves, no new orator has been discovered and no new Parliamentary authority on air affairs has come to light. All those Members who have been in the habit of speaking on Air Force politics have spoken again and in the main their views have been quite sound. Of the new Members who have for the first time taken an active part in the air debates two, namely Major Attlee and Mr. Harvey, on opposite sides of the House, have shown that they take a lively and intelligent interest in air affairs. One hopes that more will be heard from them both in the future. Major Atlee, although opposed politically to the Government, is, judging by his speech, the type of man who is a really useful critic, in that he makes people think even though he may not make them agree with him. And Mr. Harvey, though siding with the Government, showed by some of his remarks that he was quite prepared to criticise in a friendly and constructive way.

On the whole the financial outlook for the Air Force and for the Aircraft Industry is nothing like as bad as most of us feared that it would be. The actual cut in the Gross Estimates is comparatively small and where economy has been enforced it has fallen where it is least likely to affect the efficiency of the Air Force. Though the R.A.F. may be reduced in size, compared with what it should have been if the expansion had gone on normally, it will certainly not be reduced in quality.

The Aircraft Industry will suffer, but not as much as it expected. And, as one pointed out a week ago, if only the deleterious activities of the technical experts at the Air Ministry could be eliminated we could get quite a lot more experimental machines for the money that is allocated for new aeroplanes.

Not only from the Trade point of view, but also from the point of view of the Air Force, the most serious cut is the half-million reduction in expenditure on new aero-engines. There are only four firms in England actually making aero-engines and consequently a reduction in expenditure of that magnitude means a very serious reduction in business for each individual firm, even if the orders be divided fairly equally between the four. But there is always a possibility that owing to orders for certain types of aeroplanes being given the bulk of the money allocated for aero-engines may go to the firm making the engines for which those particular aeroplanes are designed, and that in consequence one or other of the remaining firms may be left almost entirely without orders for the year.

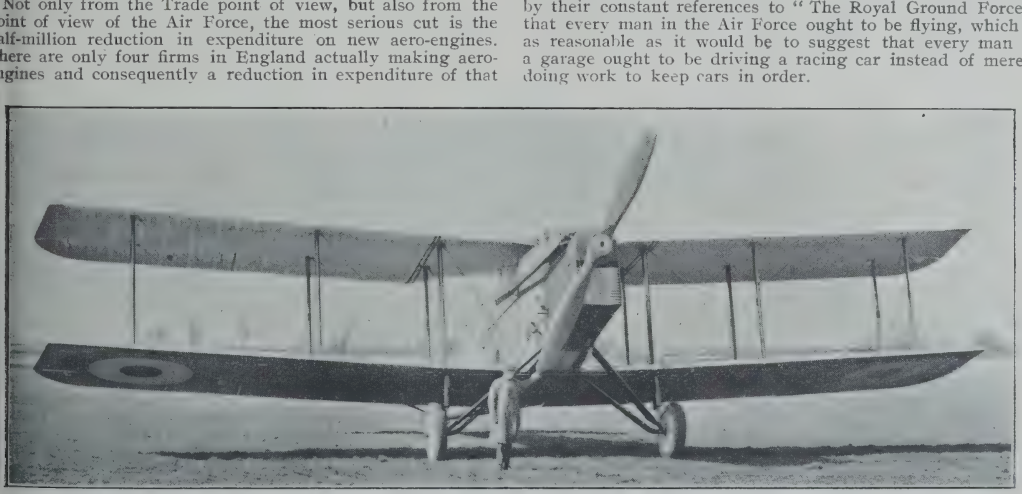
That would be a lamentable occurrence, because, if aero-engine design is to progress as it should, we certainly need not less than four firms in competition with one another to keep progress going. Good as our aero-engines are, so far as material and workmanship and design are concerned, we are still, like the rest of the World, a long way from the point when we get anything like the power out of our fuel which that fuel actually contains. So the more competition there is between the different firms the greater will be our progress towards ultimate efficiency.

One can only hope that even if there are not enough production orders for standard type engines to keep all four firms going, the Air Ministry will be able to allocate enough experimental work to each firm to enable each of them to maintain at any rate its design and experimental staffs.

One highly satisfactory feature of the debate was the way in which Sir Samuel Hoare, Sir Philip Sassoon and Capt. Guest dealt with those ill-informed newspaper critics who have been endeavouring to undermine the prestige of our First Line of Defence. One uses the adjective ill-informed advisedly, because even though the attacks may have been prompted by personal or political animosity against our Premier, Mr. Baldwin, and the Chief of the Air Staff, Sir Hugh Trenchard, the actual writers of the articles have displayed such astonishing ignorance of their subject that among people of any intelligence they have done the papers and their proprietor more harm than good.

The only way in which they can possibly have harmed the Air Force itself is that by influencing readers who are as ignorant as themselves they may possibly have prevented from enlisting in the Air Force a few young men who if properly educated and drilled and disciplined might have made useful airmen.

The writers of the article distinctly suggest to their readers, by their constant references to "The Royal Ground Force," that every man in the Air Force ought to be flying, which is as reasonable as it would be to suggest that every man in a garage ought to be driving a racing car instead of merely doing work to keep cars in order.



THE BRISTOL BERKELEY.—A high performance day bomber fitted with the 650 h.p. Rolls-Royce Condor engine. It is fitted with the patent Frise type balanced ailerons which enables the pilot to maintain lateral balance without causing any yaw effect to interfere with accurate sighting by the bomber. It is interesting to note in this connection that stick control is fitted, an unusual feature for a machine of this size.

For the benefit of readers of THE AEROPLANE who may fall into discussions with readers of *The Daily Mail*, and of those papers which are associated with it under the influence of Lord Rothermere, one would merely point out that the aeroplanes and engines of the Royal Air Force are better maintained than those of any Air Force in the World, that the pilots of the R.A.F. do more flying per head than do the pilots of any other Air Force in the World, and that the accidents per mile flown by officers and men of the R.A.F. are very much lower than those of any other Air Force in the World.

In other words, our people do more flying and better flying and cheaper flying than any other Air Service that the World has seen so far. This high efficiency is secured by adequate training of the mechanics, and that training is secured because the mechanics are taught in decent workshops and housed in decent lodgings. The work of the mechanics is well done because they are self-respecting men. And their self-respect is increased by the respect for the law, order and discipline which is inculcated in their earliest days in the Air Force on the drill grounds of Uxbridge, Halton and Cranwell. There you have the complete reply to Lord Rothermere, Mr. Lovatt Paraphraser and the rest of the crew.

Taking it all round we can at any rate rest in our beds with the assurance that though we may not have the largest Air Force in the World we certainly have the most powerful force ready for air warfare, and that though we may not have the largest and most affluent Aircraft Industry in the World we have at any rate a number of firms which are very sound financially and very sound technically and are competent to form the nucleus of a great aircraft production industry in the event of war. And evidently we have in Parliament a majority of Members who understand and believe in Air Power. They are ready to see to it that our Air Force is adequate to oppose our enemies and they are prepared to vote money when necessary for our First Line of Defence.—C. G. G.

THE DEBATE OF FEBRUARY 25—*(Continued.)*

AN AMENDMENT.

MR. HARVEY, M.P. for Kennington, begged to move as an Amendment that "in the opinion of this House either the effective striking strength of the Air Force should be increased or the ground personnel and Ministry staff should be reduced."

He congratulated the Minister on his outspoken speech. The Air Ministry was going to stay with us and the only thing the House wanted to do was to get the best possible value for the money we expended, and he agreed that when something that was temporarily established had been permanently established it would find its place in the scheme of things. He thought that the only people who were studying the spirit of Locarno at present were the British people themselves. He could not understand why the resources of France, Italy and Great Britain could not be pooled. France and Italy were considerable debtors to us and if we could be relieved of any portion of the expense of the Air Force, or of the £120,000,000 which the armed forces of the country would cost this year, it would be a considerable inducement to us to make some amelioration in the amount of the debt they owed to us.

He did not believe that excessive armaments were conducive to peace. When Mr. Churchill was at the Admiralty before the War he made gestures to Germany but Germany took no notice, and consequently we were building against one another right up to the outbreak of war. France was stated to have 1,542 active service machines and reserves of 4,000. She had decided to have 2,500 first-class service machines in use by the end of 1925, all of post-war design. In June last year Italy was supposed to have 1,506 and was aiming at 2,000. The United States were supposed to have 1,422. Japan was supposed to have 1,300 but apparently had 1,953, including reserves. He wanted to know how many of our machines on the active list are of pre-1919 design.

On figures we were a third rate power. He knew that our machines were very good and our pilots were not bettered by any in the World. Germany was doing a lot of good with commercial machines though restricted by the Treaty of Versailles. No doubt his friends on the Opposition bench were shown everything there was to be seen of the Russian Air Service.

The point was that to remain where we were was a practical impossibility. Either we ought to extend the striking force or do away with it. Everybody knew that an air force could not be equipped in a day. If we had to resort to frenzied building we should be again in the hands of the profiteer and burdened with extortionate costs.

On the subject of personnel he pointed out that we had 2,203 pilots in February this year. He thought the 44 people in the Directorate of Operations and Intelligence reasonable and proper, but by comparison Works and Buildings employed 231 persons, the Directorate of Equipment took 134, the Secretary's Department employed 282, the Accounts Department 159 and the Typing Staff was 155. In Egypt Palestine and Iraq there was an Audit Staff of 67 people for 11 squadrons of about 144 machines, which was nearly one audit employee for every two machines.

He was afraid that the official aim was to crab the efforts of civilian designers. At Farnborough there was a staff of 447 and he heard that it was difficult to get designs passed before machines were obsolete. Firms were simply being tied to the Air Ministry whether there was work for them or not.

He quoted Air-Commodore Clark Hall's article in *The United Service Magazine* of February 1924 for the statement that from the outbreak of War in 1914 it took something like a year to work up to an output of 200 machines a month, and for the statement that only a strong and healthy Aircraft Industry would be able to cope with the problem of replacements.

Referring to civilian reserves Mr. Harvey said that he was sorry to see that we only had 130 or 140 registered pilots outside the R.A.F. and only about 100 machines. These machines would be no use whatever in war. He remarked that Imperial Airways were using nothing but old machines up to a little while ago, and quoted THE AEROPLANE for the statement that owing to the use of new de Havillands we might expect from now onwards some value for the Imperial Airways subsidy. He added that we had not had very much for our money so far, but perhaps the Directors had not been taking fees during that time.

[The balance-sheet does not confirm the suggestion.]

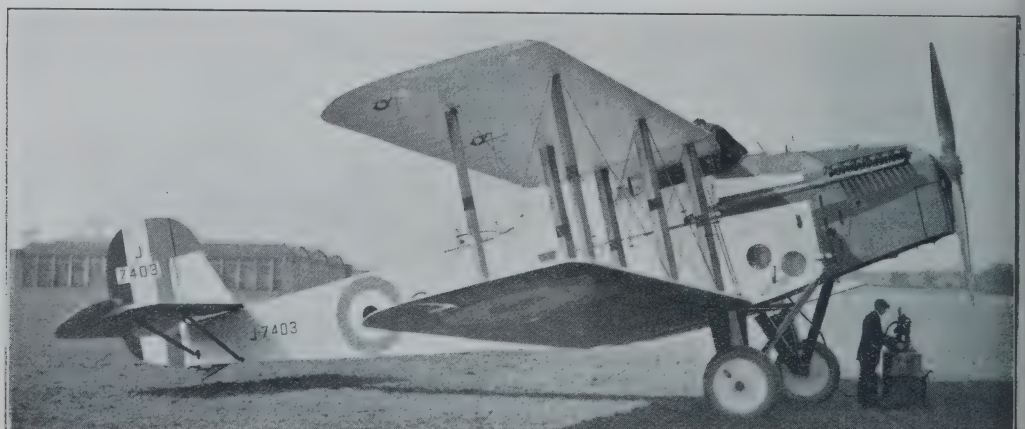
As an economy for the R.A.F. he suggested using Army units, as in France, for ground work. Reverting again to the cost of the R.A.F. he said that we had a very costly insurance policy costing us about £20,000,000 a year, and yet we were not insured. As the matter stood he considered that we were wasting a considerable amount of money.

[On the whole one agrees very much with almost everything Mr. Harvey said. We certainly could increase the striking strength of the Air Force very much if we reduced the Air Ministry staff, that is to say, departmental staffs and not the Air Staff.]

SIR FRANK NELSON seconded Mr. Harvey's amendment. He said that he, with a few other Members of his seniority in the House, had decided to see what they could do to decide for themselves whether there was extravagance in Air Force administration. They had visited Halton, where they found a total staff of 940 dealing with 1,781 apprentices, though it was expected that the latter number would shortly be 3,000. The size of this staff seemed to need explanation.

The cost of an apprentice was about £230 per annum, which was probably more than it cost a parent to send a boy to any of the four or five leading public schools of England. His bill for his son at Winchester averaged £60 to £70 a term.

Besides that the apprentices at Halton got 1s. a day pocket money. Half-a-crown a week for lads between fifteen and eighteen would not



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only be sufficient but better for their digestions, for, he stated, on Friday, which was pay-day. the evening meal at Halton was knocked off because there was so much pay received that the officials found that no meal was needed.

At Halton they had one member of the staff to every two apprentices. At a public school the proportion was one of a staff to five boys.

He did not see why it was necessary to employ 737 airmen at Halton on fatigue work in dormitories, kitchens and so forth. He would have thought that the boys might have done that work themselves. No doubt Halton provided the finest technical education in the World, but he thought that the country was paying too much for it. The Government even provided tea for 7,000 parents on Parents' Day at Halton.

Also apprentices were allowed to fly, and fifteen machines were kept on the aerodrome at Halton. He would not have thought that necessary seeing that apprentices were trained for a profession in which they would not normally have to fly at all. His own personal predilection would be not only to vote £16,000,000 for the Air Force, but anything that the Minister liked to ask provided that we could have in return the finest Air Force in the World.

[An excellent speech, which ought to make the Air Minister think. Undoubtedly the apprentices at Halton do have a good time of it, which of course they thoroughly deserve. But they might well do a bit more of their own housekeeping and reduce that staff of 737 airmen servants. One believes that the aerodrome is justified, if only to provide a landing place for pilots flying to and from Halton apart from taking the apprentices up as passengers. One's own chief criticism of Halton is that when one was there a year or so ago the apprentices were not being trained on thoroughly up-to-date machines and engines. A good deal of their time seemed to be wasted on obsolete types. It may be argued that this was only elementary education, but it is just as easy to give elementary education on up-to-date material as on obsolete stuff.]

The Under-Secretary of State for Air, Sir Philip Sassoon, replying for the Air Ministry, said that the criticism of our flying strength compared with ground personnel semed to be the same line of attack as they had seen occupying so much space in the Press. He said we had a higher proportion of qualified pilots than any country in the World. A recent American official report, the Morrow Report, showed that we had two-thirds as many pilots as the French, half as many again as the United States, more than double as many as the Italians, and roughly three times as many as the Japanese. The amount of flying done by first-line Service machines did not represent the total of the activities of the R.A.F. A considerable amount was done in testing and research work.

He asked his critics whether we should buy engines and machines before we had sheds and depots in which to store them or aerodromes from which to fly them. An aeroplane cost between £3,000 and £15,000. Some of the single-engined squadrons carried as much as £250,000 worth of technical equipment. Were we to sink capital in these machines without mechanics and engineers and without pilots to fly them? Were we to start training apprentices and engaging mechanics without schools and workshops? Some of the critics were asking us to build a house by putting on the tiles before we had cut out the foundation.

He was sure that the previous speakers would not underestimate the value of discipline. But we had seen in the papers large photographs, occupying much valuable advertising space, of Air Force cadets marching past at a Review, and being held up to ignominy as "The Royal Ground Force." Was it a considered opinion that discipline and physical fitness were unnecessary in an Air Force?

At Halton there was only 2½ hours' drill a week. In the squadrons they only did half-an-hour a week, and that included ceremonial parades and inspections. Those who saw the Air Force performance at Wembley must have thought it had taken months to accomplish. As a matter of fact the men who took part in it had only just enlisted at Uxbridge and were doing their first three months' training there previous to being posted. The performance was only an example of the fact that the Air Force was able to attract to it such very intelligent men.

The men who control the Air Force, of whom we have heard so much, were not military autocrats. They were not serjeant-majors in brass hats. They were men who have flown and still fly regularly. They were men who had watched the development of the Air Force from its earliest days and were directing it to-day with the whole experience of war behind them

As to buildings, he said that the Army and Navy had had their dockyards and barracks for generations. At the time of the Armistice the Air Force had no permanent accommodation. The Air Force officers in the Middle East still lived in huts made out of packing cases and petrol tins. In this country 85 per cent. of our personnel, officers and men, including the Staff College at Andover and the Cadet College at Cranwell, were still living in temporary buildings. In three years' time 50 per cent. of them would still be living in that way. He did not think the gibe was deserved that these men were "pampered parasites living in grandiose palaces and battening on an impoverished nation."

Only half the sum on the building voted was to be spent on personnel. The rest was for technical buildings, aerodromes, workshops and things of that kind. To judge from recent articles in the papers and elsewhere strange things were said about the air. Why should airmen need exercise on the ground? Let them go into the air. They did not need to be physically fit. What did an airman want with bricks and mortar? If he was not in the air he could roost. What did airmen want with education, or for that matter any intelligence at all? Even a goose could fly.

It was no less ridiculous to damn the Air Force on such bald statements as that fifty men were too big a number to keep one flying machine in the air. At the end of the War 84 men were required to keep a machine in the air and there was not much criticism then.

Few people realised how many things were necessary to a Service machine. Apart from the engine and its accessories, apart from the structure of the machine itself, there were articles of equipment varying according to the purpose of the machine. There were wireless, guns, bombs, bomb-racks, parachutes, photographic equipment, oxygen apparatus, compasses and 101 other articles each requiring its own special share of the ground organisation. There were fire-fightin arrangements at the aerodrome, there were fuel stores, the care workshops, sheds, roads, etc., so that a numerous highly skilled an well-equipped ground force was essential.

It was just as absurd to complain that fifty men were needed keep an aeroplane in the air as to complain that 125 men, irrespectiv of dockyard personnel, were needed to bring one of the *Quee Elizabeth's* 15-inch guns into action. It would be just as absurd complain of the number of platelayers, porters and officials that we needed to keep a train running on the line, or to cavil at the numb of messengers, officers, officials, stenographers, policemen, waiters and last but not least—of reporters that minister to the comfort, securit and efficiency of a Member of the House.

On the question of Halton he pointed out that there were so man highly technical schemes of training going on at once that they coul only be carried out by very small classes and that at the end of th year there would probably be 3,000 apprentices there. As to the shi ling a day pocket money he reminded Members that the boys had pay for their own railway tickets home. Also part of the work of th work of the aerodrome was to give the apprentices practice in swingin airscrews and handling aeroplanes and doing the duties they had perform when posted to their units.

Sir Robert Hutchison, K.C.M.G., C.B., D.S.O., Member f Montrose, approved the delay in expanding the Air Force because gave the Staff time to digest what was in some cases being hurri on too quickly. The staff was young and the R.A.F. was a one-ma show, and that one man could only tackle a certain amount at onc

He suggested linking up with the other Services so that when a officer was past flying he might go back to another Service. H suggested a conference with the War Office and the Admiralty to s how far an interchange of officers could take place. [The obvious dra back to this proposition is that in the event of war Navy and Arm officers would be required by their own Services and those who ha just finished their time with the Air Force would either have to lea the other Services short of officers by coming back to the Air For or else would leave the Air Force short of pilots. That is why th present Short Service system, with all its hardships on the individua is really in the end the best assurance to the Nation of a consta supply of pilots.]

Turning to technical equipment Sir Robert Hutchison said that w must provide the very best equipment possible for the R.A.F., an added "we should scrap all dud equipment as soon as possible"—[sentiment with which all will cordially agree.]

Brig.-Gen. Charteris endorsed everything said by the last speak and also advocated a Ministry of Defence. He said that th Air Force was extravagant, for if you took a unit of 1,000 men an £1,000,000 expended you found in the Air Service the cost was pra tically double that of the other Services. He referred particularly finance and accounts. He also wanted to see the Air Force sp and given back to the Navy and Army.

Mr. Charleton, Labour Member for South Leeds, said that in 19 he had been to Farnborough and found the experimental work the of a very useful nature. He referred particularly to metal testin a mechanical starter for aeroplanes, experiments with Diesel engine and the booster or supercharger. He also mentioned that he had see the famous helicopter working in a shed, with canvas screens protect the spectators from being deluged with oil. As one with som mechanical training he said that he thought that we should want much oil as there was in Iraq to keep the thing going.

He said that quite a number of inventions and improvements in co nection with aeroplane engines had been made at Farnborough an wanted to know whether these inventions were patented and if no why not? Were all the improvements effected by the expenditure public money handed over as a free gift to aeroplane makers who we now allowed to manufacture for the rest of the World and for o potential enemies? He feared an aeroplane Trade combine and aske why we should not make aeroplanes ourselves in Government factori and thus save the cost of our experts and the expense of seeing th the work was being done to specification. As a nation we were doi all the research work and it seemed foolish to hand over the resul to the people outside who build aeroplanes.

[For Mr. Charleton's benefit one would point out that it is t independent aircraft designers who make the improvements and t Government experts at the Air Ministry and in the Government factor at Farnborough who prevent those improvements from being us by the Air Force.]

Referring to Halton, Mr. Charleton said that he was delighted wit what he saw there. There was no such thing as a square peg in round hole. If a lad could not get on at carpentering he was put some other trade. One lad who was doing excellent work had been failure at three other jobs. A visitor remarked to an officer about o job that if it were being done on his railway it would be done b machinery. The officer replied, "Yes, but your machinery would n be in the Sahara Desert or in the Plains of Iraq. We are trainin these men to do the work without machinery."

Brig.-Gen. Warner, late R.A.F., deplored the slackening of progre and quoted Capt. Garro-Jones as saying "a well-governed natio recognises that semi-security is a useless thing."

Referring to the University squadrons he said that we owed t Member for Cambridge University, Sir G. Butler, and the Universit authorities a great debt for starting these squadrons. When the developed into real flying squadrons we should get a splendid reser of flying officers for the R.A.F. and we should develop flying as sport in this country. Flying was supposed to be a dangerous spo but in 1925 the accidents in comparison with machines flown we 90% below what they had been.

On the subject of Halton he said that the boys there would form fine basis of pilots for the R.A.F. if they were given the opportunit of flying. He encouraged the Air Minister to go on with housin and to get stations comfortable and properly settled so that they cou get married people there. And he added that by building proper aer plane sheds the machines would last longer and there would be a sav in money.

As to Civil Aviation, he said that perhaps the aircraft companies a themselves to blame for lack of business, because you could see a over the World German companies, restricted as they were in th


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building of their aircraft, getting in and taking trade from us. He suggested a conference of aircraft firms with the Ministry to see what could be done towards getting business abroad. Also, he suggested granting money for research work to private firms instead of spending it all at Farnborough.

Mr. J. Hudson, Labour Member for Huddersfield, suggested that the enthusiasm for education in the Air Force and proper housing might well be extended to apprentices and workers in other walks of life. Mr. Hudson pointed out that we were spending £7 per family per annum in the Navy and that what was true of the Navy when it was our chief defence was doubly true of the Air Force.

He quoted Sir Hugh Trenchard for the statement that the aeroplane was the most offensive weapon yet invented but a shocking bad weapon in defence. He said that no part of London was secure in the event of another war. He said that we could not defend ourselves by the expenditure of either £16,000,000 or £116,000,000 upon an Air Service. Unless we could make the Locarno spirit a reality either by agreement or by enterprise on our own behalf, by setting an example in the reduction of armament, we should face the greatest catastrophe the World has ever known.

[One would merely suggest to Mr. Hudson that the World has faced that catastrophe so many times that really it is hardly worth while worrying about it. Each succeeding war has been the greatest catastrophe the World has ever known, and after each war the World has been a better place to live in. The only greater catastrophe in history than war was the collapse of the military power of the Roman Empire, which let in the barbarians and produced the Dark Ages when, as a monkish chronicler said, "Christ and all the Saints slept," when every man's hand was against every other man and humanity returned almost to original chaos. One wishes that somebody of real influence could induce Mr. Hudson and his well-meaning associates to realise that we are not building our Air Force against our civilised neighbours but against Oriental barbarians and that our aircraft will not be used as weapons of defence but as weapons of offence.]

Capt. Brass, late R.A.F., commended offence as the best form of defence. He resented the epithet "a ground force" and the attacks in *The Daily Mail* and elsewhere on the Air Force, and he commended the development stages of building new aerodromes and having a large number of people on the ground.

He said that there was no need for an airman to spend time in the air. Some people had an idea that the only way to judge the efficiency of the Air Force was to find out how many hours each pilot had flown That was ridiculous. He would rather have quite a small efficient Air Force with efficient machines and officers than a large Air Force with a large number of rather dud machines and a lot of officers who had merely done flying. At the same time he wanted to know why the number of Flight Commanders and Flying Officers had been reduced this year.

He questioned the mobility of the Air Force and its ability to fly to the defence of areas other than London. He criticised the Short Service Commission system and suggested that some of the pay might be kept back and paid in a lump to these officers when they left the Force.

[On the whole Capt. Brass' speech did not come up to the expectations which one had based on his maiden speech on air affairs last year. As a former officer of the R.A.F. he might have got more closely in touch with Service feeling and so might have made better points than he did on the questions which he raised.]

Lt.-Cdr. Kenworthy said that the Air Force had a small but efficient Flying Service and the rest of it is glorified welfare work. [Really Lt.-Cdr. Kenworthy deserves to be congratulated on that phrase. When one thinks of the care which is taken of apprentices and cadets and the wonderful vocational educational system and so forth and the institutes for troops and all that sort of thing, it really does seem that quite a lot of the Air Force Vote does go on welfare work.]

He said that we have only had 600 or 700 machines in the air as against 4,500 French machines. He suggested that the Air Ministry Intelligence Department should give the Air Minister the opportunity of reporting to the House whether the figures, 4,500 machines for the French, 2,000 for Italy, 1,400 for the States and 1,300 for Japan, were accurate. He asked whether the French or the Italians or the Americans had cut down their Air Forces because of Locarno.

He added that if the Navy had been played the fool with like this, and if we had a Naval strength one-third of our nearest neighbour and potential enemy, the Government would not last fourteen hours and the Minister responsible would probably be hanged by the mob. It was only because the country did not understand the horrors of an air attack that this sort of thing could go on.

He thought that before Sir Samuel Hoare and Sir Phillip Sassoon took Gwydyr House in Whitehall they might have seen that their beloved airmen in Iraq and at home were adequately housed in stone buildings, if these stone buildings were necessary for their comfort.

He referred to the fact that in France all guards, fatigues and officers' servants were provided by the Army or Navy and suggested that we should do the same. [Apparently he forgot that in France the Air Force is not a separate Service, and that as a certain number of men are needed for this work in any case, it does not matter much whether they are paid by the Army or by the Air Force as the case may be.]

Capt. Reid, also late R.A.F., speaking from the pilot's point of view, said that even if we had a greatly decreased Navy we should be free from hostile attack if we had a larger Air Force. He pointed out that France only last year spent £450,000 on subsidising Civil Aviation. We, who during the War led the World as air pioneers, only intended to spend £127,000 on Civil Aviation. And last year so-called bankrupt Germany spent £244,000 on Civil Aviation.

He made the astounding statement, coming from a pilot, that German machines could with a few hours' work spent on them be converted into hostile raiding machines. [One wonders what he thinks could be done in the way of raiding by German commercial machines unaccompanied by fighters and how many hours' work it would take to produce the bombs and bomb-racks, apart from the time which would be necessary to fit them and adequate sights to ordinary German commercial machines, and how he thinks Germany would get pilots and observers properly trained to the use of bomb sights and machine guns.]

He gave about the least accurate description of the famous balloo aprons that one has yet read outside the popular newspapers, and mad the statement that no machines were ever caught by them,—which not strictly accurate.

He made one good point when he said that he wished Member of the House would give the same amount of thought to future a raids as they gave to the proposed, or supposed, future raiding of th Road Fund, over which they had worked themselves into a frenz a few days before.

Sir Samuel Hoare, replying on the whole debate, said that obvious he could not speak on the subject of disarmament, though he coul assure the House that he personally was as anxious to see a reductio of the expenditure on armaments as any gentleman opposite. And th question of a Ministry of Defence was one for the Prime Ministe and the Cabinet.

He said that it was quite obvious that there was a growing feelin in the House for much closer co-operation between the three Service So far as his Department was concerned everybody wished to see th closest co-operation between the three Services and between the thre Chiefs of Staff.

On the question of Short Service officers he said that if all officer were on a long service basis there would be too many senior officer in a force that should be principally a flying force, and further, w should not be able to build up so quickly the Reserve which is s essential in any Service.

Replying to Sir Frederick Sykes, he said that he found himself i some difficulty whenever he had to answer his gallant friend, becaus whatever attempts he made to defend the Air Force and Aviation i this country generally, he was always wrong in the view of his gallan friend.

Two or three years ago Sir Frederick Sykes was clamouring for a increase in the strength of the Air Force and the Air Ministry wa now charged with setting up a great organisation. Sir Frederick Syke had pressed for more aids to research and he now criticised the Ai Ministry for a small purchase of the now notorious American engines He might say that they had now created a squadron of these machine for the purpose of research and they would be miles an hour faste than any squadron in any Air Force in the World.

On the subject of buildings he had hoped that Sir Frederick Syke would have shown greater sympathy with the Air Ministry than he di show in his somewhat negatively critical speech. Sir Samuel aske what he was to do with the new squadrons if he had no building in which to house them and no aerodromes which they could use He would like to spend all this money on fighting squadrons an no money at all on buildings.

How could he defend a policy which did not provide houses fo airmen and officers when every other department of the Governmen was providing houses for every other section of the community. A to the Air Ministry staff he said that the rise in numbers was insign ficant compared with the increased number of squadrons. Inquiry aft inquiry had been held into the administration of the Air Ministry an had all come to the conclusion that on the whole the administratio was sound and economical.

As to the number of men on the ground he pointed out the fac that while Sir Frederick Sykes was at the Air Ministry there wer 83 men on the ground to one aeroplane in the air, whereas ther were now less than 50.

Sir Frederick Sykes interrupted with the remark that that wa under war conditions, and Sir Samuel Hoare replied that Sir Frederic had himself stated time after time that at the end of the War ou Air Force was the most efficient in the World.

Sir Samuel claimed that our Air Force was the most efficient in th World. If he wanted to make a better show he could throw in train ing machines and experimental machines and make the comparison better with foreign Powers than it did on the basis of first lin machines.

Lt.-Cdr. Burney asked for a technical definition of a "first lin machine." Sir Samuel Hoare replied that it is "a machine whic can not only be put into the air without delay but can be kept in th air with reserves behind it." He added that he could go further with alternatives for making the number of squadrons seem greate He could lessen the amount of training of airmen and pilots. The we might appear to have more machines, but we should have mor crashes.

When he heard these charges that the R.A.F. was a ground force and not a flying force he would ask members to go to Iraq or Indi and see the flying work the squadrons were doing there. No squadron in any other country in the World could carry out work so efficientl as those squadrons were doing.

He would ask them to go to Hendon year after year, and they would find that the Air Force had a standard which was not reached i any country in Europe. We had half as many pilots again as th U.S. We had fewer pilots than France, which had a much greate Air Force than we had. But Sir Frederick Sykes and others wh might be inclined to make a charge that we were a ground force should know that we were flying twice as many hours as any othe Air Force in the World. We actually flew more hours last year tha the whole of the Air Services of France.

Sir Frederick Sykes again interrupted to say that the charge wa not against the Force itself, it was the most magnificent Force i the World. It was against the policy that handled the Force. Ther was too little flying and too little research.

Sir Samuel replied that the policy was to have as many pilots an as much flying and as much efficiency as possible. He disagreed wit his honoured and gallant friend who seemed to think that when h was at the Air Ministry everything went well and since he left every thing had gone badly, though Sir Samuel Hoare agreed that it migh be impertinent for him to put up his opinion against that of Si Frederick Sykes.

THE DEBATE OF MARCH 8.

Major Attlee opened the debate on the Estimates in the Repor stage. He asked for an explanation of the defence policy of th country as a whole. He understood that the real rôle of the Air Force was to be the eyes of the Fleet and of the Army. If so there would be no case for a separate Air Force. He wanted to know how the Air Force by itself was to be employed. Was it to terrorise civil popula

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tions? He suggested that that was not a man's job. He objected to allowing aeroplanes and engines made in this country to be sold to other nations. Referring to the new agreement with Imperial Airways Ltd. he said that it was not socialism, it was a case of some very astute people making the best of both Worlds. It was a dangerous principle to pay subsidies to private enterprises.

Major Hills, formerly a Director of Imperial Airways, said he did not know why Major Attlee should impute malign motives to everybody who went into business. Every civil aviation company in Europe had a subsidy, but he believed civil aviation would pay in time. He advocated a Ministry of Defence and said that it would effect a large saving. And he asked that the Colwyn Report might be made public.

He justified the maintenance of a large ground staff in the Air Force because it ensured the safety of pilots in the air. He quoted a well-known pilot as saying "Our progress in the air has gone ahead of our progress on the ground. Our pilots want better directional wireless, fog-piercing lights, automatic control and, above all, weather reports."

Mr. R. Smith, a Labour Member, brought up the usual argument that preparedness for war produced war.

Sir Harry Brittain, of the Napier Company, said that we had no Empire air policy and suggested a Committee to consider Empire aviation. He thought that working on a large scale we should not want any subsidies and that possibly in a few years aviation could be made to pay and pay well. Foreigners were endeavouring to compete against us in the British Dominions. He asked the Air Minister to see that the subject was brought before the forthcoming Imperial Conference. He questioned whether Civil Aviation should be worked by the Air Ministry at all. If the Air Ministry would not encourage Civil Aviation it might be handed over, perhaps, to the Board of Trade.

Captain Garro-Jones said that the reduction of the Air Force had been carried as far as it could go and as a London Member he regarded our position with dismay and apprehension.

Mr. Penny, Conservative Member for Kingston-on-Thames, said that it was of paramount importance that our First Line of Defence should be adequately supplied with aircraft.

Commander Burney, of airship fame, remarked that most of the criticism of the Estimates came from the Government side and had extracted from the Air Minister a promise to inform the Prime Minister that there was a large body of opinion in the House in favour of greater co-ordination betwen the fighting Services. It had been stated that each aeroplane cost the country £2 for every hour that it was in the air. The Secretariat at the Air Ministry cost three-and-a-half times as much as that at the War Office and the Admiralty. It was no answer to say that the Air Force was efficient. The question was were they getting value for the money?

He advocated a permanent Secretariat for the three Chiefs of Staff, and the abolition of two of the three Ministers with five out of the nine Under-Secretaries.

Commander Burney, referring to the attacks on the Air Force in *The Daily Mail* and *The Morning Post*, agreed that the attacks were inimical to the prestige of the Air Force, and therefore to its efficiency, but he said we must accept such attacks as part of the price we had to pay for the bad organisation of our fighting forces.

Mr. Thurtle, the pacifist, said that there was an overwhelming case for no Air Force at all. [One merely wonders mildly whether Mr. Thurtle would also advocate the abolition of the police force, the fire brigade and all insurance companies.]

Mr. Basil Peto did not think that the question of a separate air arm could be regarded as settled and done with. Navy opinion was in favour of the naval arm being part and parcel of the Fleet. Co-operation between the Services could never produce the efficiency essential to Fleet operations.

He thought that Civil Aviation might well be put under the Board of Trade. He did not want it put under the Ministry of Transport, because he did not want to see that Ministry perpetuated. He looked forward to the time when the Ministry of Transport and the Secretary of State for Air would leave the Treasury Bench arm in arm for good. He did not want a single Ministry of Defence, he only wanted the Air Minister to go.

[Mr. Peto is a typical Die-hard, of the extreme naval species. He is quite a useful person, because like *The Morning Post*, he is almost invariably wrong, and so by considering his views and taking a precisely opposite view one can almost invariably be right.]

The Official Reply.

Sir Samuel Hoare, replying on the debate, said that he was authorised by the Prime Minister to say that he would welcome a debate on one of the supply days when he could deal comprehensively with the question of a unified defence.

[*The Times* report on the debate contains what seems to be a curious mistake at this point. It reads as follows:—

"Sir S. Hoare, replying to the debate, said he found himself in sympathy with hon. Members who wished to have before them a single Defence Ministry Estimate."

Hansard reports Sir Samuel as saying:—

"I sympathise with hon. Members who, having only a single Service Estimate before them, have not the opportunity of dealing with the question of defence as a whole."

The Times report distinctly implies that Sir Samuel Hoare personally is in favour of a single Ministry of Defence, whereas what he actually meant was that he sympathised with Members having to discuss the Air Estimates before the Navy and Army Estimates were published.]

As to making certain Services common to the three fighting Services he said that the Air Ministry did not wish to set up new departments. They wanted to insure that the biggest purchaser of the three Services should purchase for all three. The Air Force had no Army Service Corps, for example, and got its commissariat, and such things as barrack furniture, from the Army. In the same way torpedoes would be supplied by the Navy.

The Air Ministry did not set up hospitals where there were naval and military hospitals available. There were only three Air Force hospitals in England. In Iraq the Air Force hospitals were doing the work for British soldiers.

They only had about twenty chaplains and at some stations the Air Force was served by local ministers. They had no dental service as they relied on the R.A.M.C.

He would not discuss the old controversy about an independent Air Ministry. The claims urged by Mr. Peto had been turned down time after time on the grounds of economy and efficiency.

Sir Samuel Hoare made the important statement that the Colwyn Committee had turned down the proposal to send the Fleet Air Arm back to the Navy *on the grounds of economy and efficiency*, namely, that they were more likely to have an efficient Air Force to deal with the very difficult problems of air warfare if the duties were concentrated in one department and under one Staff, instead of being broken up, as they were until a year or so before the end of the War, between the Navy and the Army.

The Air Staff and he himself were seriously considering the question of disarmament and were in direct communication with Lord Cecil, who would represent the Government on the Disarmament Committee of the League of Nations. They were as anxious as anyone to see some restriction put upon a form of warfare which if it was allowed to go on uncontrolled would end in the destruction of civilisation.

He said that, perhaps, however efficient our Air Force might be, it could never make it impossible for an attacking force to reach these shores, but he was sure that, provided their expansion programme was carried out and that they had an Air Force of the size contemplated, they might look forward to making it very risky for any foreign Power to attack this country.

On the subject of parachutes he said that very soon every pilot and every machine would be equipped with a parachute. Referring to Civil Aviation he said that the new contract with Imperial Airways had been made to provide an incentive to the company to develop the newest types of machines.

The Propaganda Fable.

Commander Bellairs, another naval Die-hard, said that Civil Aviation ought to be under the Board of Trade.

As to the Colwyn Committee, he understood that it was favourable to the Air Ministry in its controversy with the Admiralty and asked what qualifications the Committee had to pronounce on the question. He believed that the Chief of the Naval Staff was never asked to give evidence.

He then stated that confidence in the Navy was being undermined in every direction mainly through propaganda inspired largely by the Air Ministry.

Sir Samuel Hoare asked him what evidence he had got for that statement.

Cdr. Bellairs said that the Press knew full well. He had seen propaganda from the Air Ministry himself. There was in the Air Ministry what no other department of the fighting Services had, a special man for dealing with propaganda in the Press.

Sir Samuel Hoare contradicted the statement and said that no official in the Air Ministry ever touched propaganda.

Cdr. Bellairs said that he could produce a confidential document to prove his statement.

[Evidently Cdr. Bellairs refers to the Department of Information in the Air Ministry, over which Mr. C. P. Robertson presides. As one who is very closely in touch with that department one can say definitely that there has never been anything less like a propagandist department.

It acts fully up to its name as a department of information. When one wants information one has to go and ask for it, and, subject to the limitations entailed by the foolish secrecy on which Sir Geoffrey Salmond's incompetent staff insists, the Department of Information is always ready to go to endless trouble to impart all the information for which it is asked. But it rigorously refrains from touching political subjects.

Such documents as it issues unasked are simply official statements of actual facts such as appointments, accidents and so forth from the Air Force, and Notices to Aviators from the Department of Civil Aviation, which correspond to the Notices to Navigators issued by the Admiralty or Trinity House.

Cdr. Bellairs' statements are all definitely untrue. The War Office maintains, or did maintain quite recently, an official whose duty it is to issue statements to the Press, on exactly the same lines as those issued by the Air Ministry. And the Admiralty, which calls itself the "Silent Service," and has frequently announced with an air of unctuous rectitude that it does not maintain a publicity department nor any official whose duty it is to communicate with such common people as the Press, does definitely engage in purely political propaganda, which are carried on personally by officers of the highest rank on the active list of the Navy, at the Admiralty and serving at naval stations, who communicate direct with the Press despite the fact that such communication is expressly forbidden by King's Regulations.

These facts are perfectly well-known to every newspaper man in any responsible position in Fleet Street, though they may not be commonly known to the mere sub-editorial and reporting staffs. Practically all the anti-Air Force agitation in favour of the Admiralty has been directly instigated by senior officers of the Navy who are on the active list, and if Cdr. Bellairs does not know it, then one can only say that he is singularly out of touch with certain aspects of the Service to which he formerly belonged.—C. G. G.]

The Balance.

Mr. Wells, Conservative Member for Bedford, said that he believed in a separate Air Ministry, but he was in favour of a Ministry of Defence as well.

Mr. Hardy, one of the Glasgow Members, urged the Government to take steps towards disarmament.

Colonel Crookshank, Conservative Member for Berwick, welcomed the statement that there would be close co-ordination between the three Chiefs of Staff. He said that any splitting up of the Air Force would do irreparable harm.

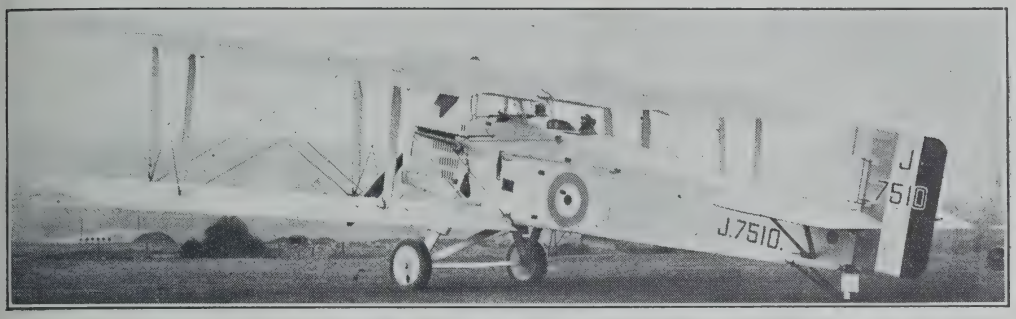
Mr. Viant, Labour Member for Willesden, questioned whether, in view of the high cost of gas, airships were likely to be a commercial success. (One compliments Mr. Viant on the joke, for presumably he knows that coal gas has nothing to do with airships.)

Sir Frederick Sykes lamented, as usual, that not enough was being done for Civil Aviation.

Viscount Sandon was another to put in a word for a Ministry of Defence and said that the Air Ministry especially had everything to gain by being embodied in it. This reform could only be achieved by all three Forces coming in on an equal basis.

The abolition of the Air Ministry would not be a step in the

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direction of a Ministry of Defence. Neither Navy nor Army had any basis, except a sentimental one, for urging that they were not properly treated by the Air Force. The complaints rested on prejudice and such things as to whether equipment and buttons were right

A Member interpolated the word "rubbish," and Viscount Sandon told him to look at the Service notes in the papers, where he would find such things as the statement that in future officers' servants and mess-cooks would be drawn from the Navy instead of from the Air Force. The other Services wanted to creep in by means of servants and mess-cooks and things of that sort instead of on the big basis of fighting.

Colonel Heneage, Conservative Member for Louth, also advocated a Ministry of Defence.

Colonel Gunston, Conservative Member for Thornbury, said that infantry would always be the chief arm of the fighting forces. He wanted an Air Force to help the Army to carry out its duties. He felt anxious about the reduction in the money for aero-engine construction.

Colonel Crookshank said that the public ought to know how many aeroplanes we have got.

Admiral Sueter reminded the House that over four years ago he introduced a Ministry of Defence Creation Bill, but only got eight supporters for it. He was told that now he could get between two hundred and three hundred supporters. He complained that we were not spending enough money on the Air Force. We ought to have another four or five millions.

Sir Philip Sassoon, Under-Secretary of State for Air, referred to Mr. Cobham's flight and said it was to such flights as this, which blazed the trail round the World, that the Air Ministry looked for development of air communications in the future. He said that accurate weather reports were a factor of incalculable importance to the regularity and safety of air communications and that arrangements were being made for such services along the new route to India.

Mr. Baldwin, the Premier, stated that he would welcome a discussion on the Ministry of Defence, but not before Easter.

(*Finis.*)

THE BRISTOL JUPITER VI COMPLETES ITS TEST.

On Mar. 8 the Bristol Jupiter completed a distance of 25,078 miles in 225 hours 54 minutes. The engine, it will be recalled, is the Jupiter engine "of the latest type" (it is really the Jupiter VI but the Air Ministry thinks that that is secret). It has been fitted into a Bristol Bloodhound, every part of it has been sealed by the A.I.D. so that it has been impossible to change any part except plugs without breaking a seal. Three sets of plugs were in use, and these were changed about periodically. Mr. F. L. Barnard and Lt.-Col. Minchin have flown the machine throughout the tests.

The only trouble experienced throughout the tests was a forced landing on Mar. 4 with an oiled-up plug. No replacements of any kind whatever have been made. The average petrol consumption has been 21.9 gallons per hour and 3.95 pints of oil per hour. The horse power is 450-485, and the weight per horse power is 1½ lbs.

The final flight was non-stop from Bristol to Croydon and back and the engine at the end was running as well and developing as much power as at the start.

The distance covered is equal to a flight round the world at the equator. The engine is now being dismantled for inspection and a full report will be issued.

It is believed that this is the greatest distance ever covered by an aero-engine or car engine without replacements.

The Bristol Jupiter has proved that not only is it the World's premier air-cooled radial of its weight, but also that it has the best performance and is the most reliable.

The Bristol Company, and Mr. Roy Fedden, the designer of the engine, deserve all praise.—G. D.

SQ. LDR. HAIG'S APPOINTMENT.

As stated last week, Sq. Ldr. R. A. de Haga Haig has joined the aircraft department of William Beardmore and Co. Ltd. His exact position in the firm will be that of Outside Manager for equipment and tests of aircraft and aero-engines. He will probably be stationed at the firm's London office.

His appointment in no way affects that of Mr. A. N. King will, who remains chief pilot of the Beardmore flying school

THE SCHNEIDER TROPHY.

The Research Department of the Air Ministry has just three weeks more in which to make up its vacillating mind as to whether or not the Schneider Trophy is to be presented to America free gratis and for nothing, or whether there will be a fight.

Up to now there is no news of Sir Sefton Brancker's forlorn hope in which he is trying to persuade the U.S. Authorities to postpone the contest at our pleasure. At any rate Sir Sefton has got into America all right, which is one important step in the right direction.

One was told recently why the Research Department is so named. Long after someone has searched for something and found it, the Research Department re-searches for it. The only difference is that they do not always find what they seek.

A case in point is the Autogiro. Senor de la Cierva searched for this years ago and found it, and has already progressed much. The Research Department is now searching for the secret, and one is told that the results prove fairly thoroughly and conclusively that the thing cannot possibly exist.

One took Lt.-Col. Bristow by surprise the other day and asked him how his Schneider racer, the Crusader, was progressing, and, before he knew where he was, he had given away the awful secret that building had started.

A recent rumour is to the effect that a well-known aircraft firm which has built some quite quick aeroplanes, has called in a foreign aerodynamic scientist as a consultant, to see whether its projected Schneider racer can be made still quicker.

Another rumour is that the Supermarine designs are ready and that work can begin instantly if the Air Ministry makes up its mind about something to do with speed.

Yet another rumour has it that one of the big petrol firms is interested in building one of the challengers and will Be Prepared to Shell out quite a lot of money for it, so an Anglo American race may happen after all.

Meanwhile Mr. Saunders cowes all impertinent inquirers about the progress of his challengers. And somebody has seen a long thin thing with a Jupiter engine at one end being built near Bristol.

There will be three more weeks of steady rumour, for entries have to be made to the U.S. people by Mar. 31.—G. D.

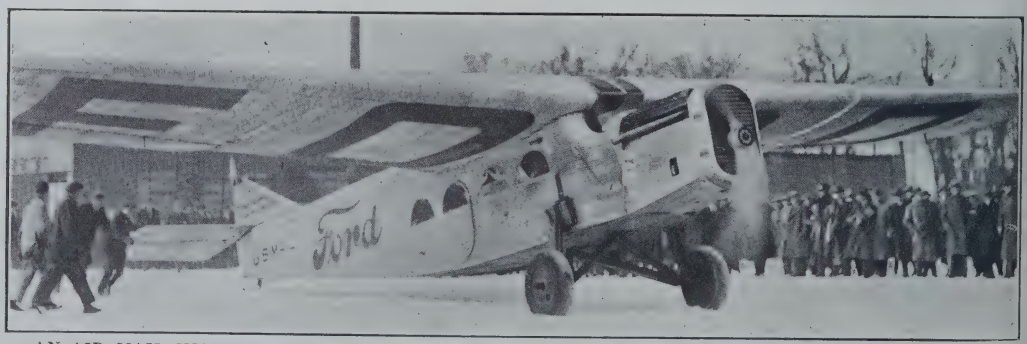
THE FORD AIR MAIL SERVICE.

On Feb. 15 the Chicago-Cleveland air mail service, for which the Ford Air Transport Service has obtained the contract from the U.S. Post Office, was opened officially, when the first sacks of mail were carried from the Ford Airport, Dearborn, Detroit, to Chicago and Cleveland. The machine used was a stout all-metal monoplane (400 h.p. Liberty engine), named "Maiden Dearborn I." It was this machine which inaugurated the private air service of the Ford Air Transport Service on April 13, 1925, which has been used for transporting Ford automobile parts between Detroit and Chicago.

Since the opening in April, this particular machine has covered over 50,000 miles on this service, and up to date the entire service has flown a total of 186,610 miles, and carried a total of 897,000 lbs. of freight.

The opening of the Air Mail Service was made the occasion of a ceremony at the Ford Airport. Mr. A. J. Groesbeck, Governor of Michigan, Irving W. Glover, Second Assistant Postmaster General, the Mayor of Detroit, and Henry and Edsel Ford, all "assisted" in the loading of the first air mail sacks.

In Cleveland and Chicago the arrival and departure of the air mail machines were also celebrated in an appropriate fashion.



AN AIR MAIL INAUGURATION.—The "Maiden Dearborn," Stout All-Metal Monoplane, starting from the Ford Airport on Feb. 15, with the first consignment of mail matter for Chicago and Cleveland.

THE FIRST AEROPLANE TO FLY FROM LONDON TO CAPE TOWN.

The D.H. Type 50.J

ENGINE 385 H.P. ARMSTRONG SIDDELEY JAGUAR



On Wednesday, February 17th, Mr. Alan J. Cobham, flying a D.H. Type 50.J Aeroplane arrived at Cape Town having flown from London, 8,020 miles in 94 flying hours.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
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THE ROYAL AIR FORCE.

The London Gazette

Mar. 2.

General Duties Branch.—Flt. Lt. C. C. Wigglesworth, A.F.C., is granted a perm. comn. in this rank (Jan. 1).

The following airmen are granted perm. comns. as Plt. Offs. on probation with effect from and with seniority of Mar. 1:—10577 Sjt. J. McGuinness; 90741 Sjt. G. E. Campbell, D.F.M.; 220549 Sjt. A. H. Owen.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. W. Elias, J. E. W. Bowles, H. R. D. Waghorn, F. M. Denny (Jan. 31); R. F. Francis (Feb. 15).

Wing Cdr. T. G. Hetherington, C.B.E., is restored to full pay from half-pay (Feb. 17).

Wing Cdr. J. C. Halahan, C.B.E., A.F.C., is placed on the retired list and is granted permission to retain the rank of Group Capt. (Feb. 28); Sq. Ldr. R. A. de H. Haig, A.F.C., is placed on the retired list at his own request (Mar. 3); Flg. Off. H. L. Christie is transferred to the Reserve, Class A (Mar. 1).

Stores Branch.—Flg. Off R. D. Lambert is placed on the retired list on account of ill-health (Mar. 3).

Accountant Branch.—Flg. Off. F. C. Warner (Capt., R.A.R.O., Leics. Regt.) is dismissed the service by sentence of Field General Court Martial (Dec. 30, 1925).

Memorandum.—Flt. Lt. E. L. Johnston, A.F.C., is granted permission to retain the rank of Sq. Ldr.

Reserve of Air Force Officers.—E. C. Hoar is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Mar. 2). The following Plt. Offs. are promoted to the rank of Flg. Off.:—C. H. E. Coles (Dec. 16, 1925); L. F. Cubitt (Dec. 23, 1925); W. R. W. Kelley (Dec. 27, 1925); A. A. C. N. Smith (Dec. 31, 1925); H. A. Record (Jan. 21); L. H. A. Fray (Jan. 24); R. D. Wayman (Jan. 26).

Appointments.

Week ending Mar. 8.

General Duties Branch.—Group Captain W. F. MacNeece, C.B.E., D.S.O., D.F.C., to R.A.F. Depot Supernumerary, whilst employed with League of Nations Disarmament Committee, 1/3.

Wing Commander I. G. V. Fowler, A.F.C., to I.A.A.D., Henlow, for Technical duties, 8/3.

Flight Lieutenants F. H. Laurence, M.C., to H.Q., India, 26/1. A. S. G. Lee, M.C., to H.Q., Iraq, 16/2. C. Turner, A.F.C., to H.Q., Egypt, 14/2.

Flying Officers J. S. Phillips, to H.Q., Egypt, 15/2. J. T. Hall, to No. 9 Sqdn., Manston, 8/3. E. S. Bullen, M.B.E., to R.A.F. Base, Calshot, 8/3. P. D. Baker, to No. 2 F.T.S., Digby, 23/3. F. R. D. Swain, to No. 2 F.T.S., Digby, 1/3. A. W. Daly, to No. 11 Sqdn., Netheravon, 23/2.

Pilot Officers J. McGuinness, to R.A.F. Depot on appointment to a Perm. Comn. (on probation), 1/3. G. E. Campbell, D.F.M., to No. 39 Sqdn., Spittlegate, on appointment to a Perm. Comn (on probation), 1/3. A. H. Owen, to No. 207 Sqdn., Eastchurch, on appointment to a Perm. Comn (on probation), 1/3.

Stores Branch.—Squadron Leader W. L. Shaw, M.B.E., to Air Ministry, 8/3. Flight Lieutenants J. C. Shakeshaft, to No. 10 Group H.Q., Lee-on-Solent, 8/3. P. J. Murphy and P. F. Connaughton, to Supply Services (Central Supply Depot), Iraq 6/2. Flying Officers E. F. Elliott, to Supply Services (Base Supply Depot), Iraq, 6/2. G. W. Longstaff, to Supply Services (Central Supply Depot), Iraq, 6/2.

The King's Levee.

His Majesty the King held a Levée at St. James's Palace on Mar. 2.

Among those in attendance upon His Majesty was Air Marshal Sir John Salmond, Principal Air Aide-de-Camp.

Among those present were Group Captain P. F. M. Fellowes, Aide-de-Camp in waiting, and Wing Cdr. Louis Greig.

The General Company included Wing Cdr. J. C. Halahan.

The following officers of the Royal Air Force were presented to His Majesty by the First Lord of the Admiralty:—Anderson, Flt. Lt. C. T., D.F.C., on first appointment; Armstrong, Flg. Off C. A., on first appointment; Carey Flt. Lt. D., on first appointment; Coryton, Sq. Ldr. W. M.V.O., D.F.C., on first appointment; Dolphin, Sq. Ldr W.; Fellowes, Group Captain P., D.S.O., A.D.C., on appointment as Air A.D.C. to His Majesty; Glenny, Sq. Ldr. A. M.C., D.F.C., Houghton, Flt. Lt. R., A.F.C.; Junor, Flt. Lt H., D.F.C., on first appointment; Knocker, Flt. Lt. G., on first appointment; Munro, Air Vice-Marshal D., C.B., C.I.E., M.B., M.A., F.R.C.S., K.H.S., on promotion; Reid, Wing Cdr. G., D.S.O., M.C.; Rowan, Flt. Lt. A., on first appointment; Savile, Flt. Lt. W., on first appointment; Smith, Flg Off. G., on first appointment; Welsh, Wing Cdr. W., D.S.C. A.F.C., on promotion.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. Expedition, under Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., which left Cairo on Mar. 1 to fly to Cape Town and back, arrived at Atbara on Mar. 3, and Khartum on Mar. 4.

They left Khartum on Mar. 6 for Malakal, but were forced to land at Kosti owing to a sandstorm. They arrived at Malakal on Mar. 8.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident at Karachi, India, to a Bristol Fighter, of the Aircraft Depot, Karachi, on Mar. 5, Flg. Off. Camille Percy Maurice Benjamin Caillard, the pilot of the aircraft, was killed, and No. 111099 L-AC. Andrew Barron was seriously injured and died shortly afterwards.

Aircraft Carrier Armament.

The Times of Mar. 6 states:—

H.M.S. *Hermes*, Capt. C. P. Talbot, D.S.O., is due to arrive at Malta from the China Station on Mar. 13, to resume duties with the Mediterranean Fleet. As the First Lord states in his Memorandum, the situation in Canton last July rendered it necessary to despatch this vessel there from Malta as an additional protection for British lives and property.

According to the new Return of Fleets, the anti-aircraft armament of the *Hermes* has been reduced from four to three 4 in. guns. The *Argus* has four such weapons, the *Eagle* five, and the *Furious* six.

Of the aircraft carriers building, the French *Béarn* will have an anti-aircraft armament of six 3.9 in. guns, the Japanese *Akagi* of 4.7 in., and the American *Lexington* and *Saratoga* of 12 5 in. There is, therefore, considerable variation in current practice in this important feature of design.

The Desert Mail.

The following is taken from *The Times of Mesopotamia* of Feb. 7:—

Basrah, Saturday.—Due on Monday, the overland mail arrived in Basrah to-day, and even so, this mail would not have been received but for the help of the R.A.F., a fact which makes it still clearer that the sooner there is a weekly air mail—and passenger—service the better.

Our Baghdad Correspondent wires:—Baghdad, Friday: The overland mail cars are still stuck, but the mails reached Baghdad to-day by air.

R.A.F. SPORTS AND PASTIMES.

Rugby Football.

R.A.F. v. *Oxford University*:—The R.A.F. beat Oxford at Oxford, on Mar. 3, by three goals, one penalty goal and three tries (27 points), to one goal and one try (23 points).

The Times account of the game states:—

Soon after the start H. A. Caccia took advantage of a blunder to score, C. Cumings converting an easy try. Then after J. D. Clinch had kicked a penalty goal for the R.A.F G. E. B. Abell, picking up in the loose, dashed over for the second Oxford try, which Cumings again converted.

Following this the R.A.F. made a great rally, which produced three tries by G. V. Harvey, P. J. Chambers, and J. F. Wintour, none of which was converted. These scores were sufficient to give the Royal Air Force a lead of two points, but before half-time H. P. Jacobs cut out a nice opening for

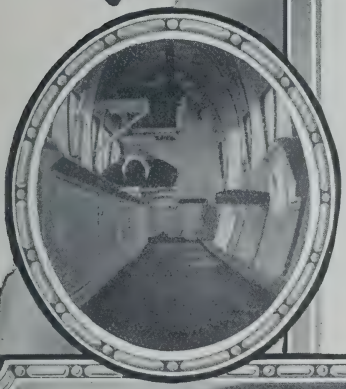


INTER-SERVICE STEEPLECHASING.—Sq. Ldr. J. Everidge's "Regina" (owner up) winning the race for Lord Beatty's Cup at the Army Point-to-Point Steeplechases at Hazleton, on Mar. 3. Thus an R.A.F. officer won the Naval officer's cup at the Army's meeting—which should make for a good understanding between the Services. On the following day Sq. Ldr. Everidge, M.C., on "Regina," won the R.A.F. Heavy-weight Steeplechase at the R.A.F. Point-to-Point Meeting at Kimble.

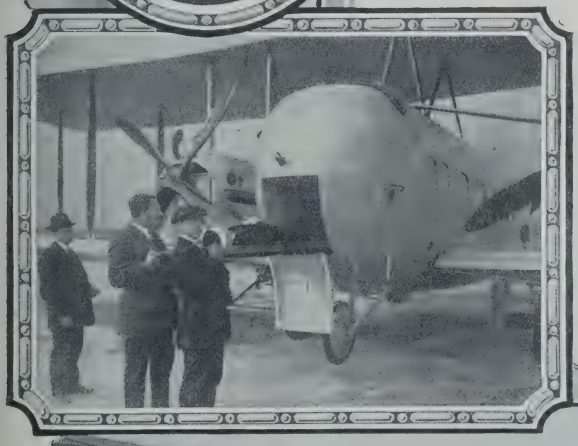
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The machine illustrated is the Vickers "VIMY" Ambulance, as supplied to the Royal Air Force for operation in the East, where this type has proved of great value for the rapid evacuation of sick and wounded.



Fitted with twin 450 H.P. Napier "Lion" engines the "VIMY has accommodation for a crew of 2 and Doctor, Nurse and 4 stretcher cases or 8 "sitting up" cases.

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White Thompson, and so when the teams crossed over Oxford were leading by 13 points to 12.

Soon after the second half had been begun H. P. Jacob threw himself over for another try, which J. F. Edmiston converted with a great kick. G. D. Harvey then scored the best try of the match, after some excellent combination with P. J. Chambers and N. Moass, and E. G. Taylor replied for Oxford, who ten minutes from the end led by six points.

Harvey scored another try for the Royal Air Force, and Lord Bandon finally put the result beyond doubt. Both tries were converted by J. S. Chick, whose place-kicking gave the R.A.F. their victory by four points.

Hockey.

R.A.F. v. *R.N.*:—The R.A.F. beat the R.N., at Uxbridge, on Feb. 27, by 3 goals to 2. This is the first time the R.A.F. have beaten the Navy at Hockey. *The Times'* account of the game states :—

Flt. Lt. Murphy played a magnificent game for the R.A.F. during the opening period, while Surgeon-Lieut. Phillips and Surgeon-Lieut. D'Arcy were prominent throughout the match for the Navy. Lieut. Atkinson and Lieut.-Cdr. Bartley scored for the losers before half-time, but two goals from Flg. Off. Bingham-Hall equalised the scores before the interval. Superior combination gave the R.A.F. more of the game after the change of ends, but they could score only once more, Flt. Lt. Hampton breaking through. Plt. Off. Vines again played well for the winners, and his good passing was responsible for two of the goals. More might have been recorded but for a good display on the part of Lieut.-Cdr. Campbell, in goal for the Navy.

The R.A.F. team were :—AC.1. W. Johnson (Cranwell), goal; Flt. Lt. F. J. Murphy (Halton) and Flg. Off. C. F. Roupell (Cranwell), backs; Flt. Lt. J. S. Smith (Halton), Flg. Off. A. F. Cook (Cranwell), and Sq. Ldr. L. C. Keeble (Henlow), half-backs; Plt. Off. C. P. Vines (Farnborough), Flg. Off. V. B. Bingham-Hall (Farnborough), D. G. O'Shea (Education Staff, Halton), Flt. Lt. E. B. C. Betts (Uxbridge), and Flt. Lt. H. N. Hampton (Uxbridge), forwards.

Army v. *R.A.F.*:—The Army beat the R.A.F., at Aldershot on Mar. 2, by seven goals to one. The Army forwards were in very good form. The R.A.F. backs defended well, and at half-time the score was two goals to one.

R.A.F. v. *Middlesex*:—The R.A.F. were beaten by Middlesex, at Halton, on Feb. 24, by 4 goals to 3. The Air Force were leading at half-time by 2 goals to 1. Plt. Off. Vines was the best of the R.A.F. forwards, and was mainly responsible for all the goals scored by his side.

Boxing.

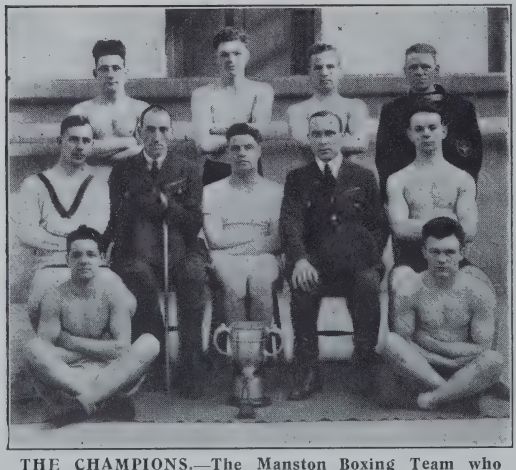
The final round of the R.A.F. Team Boxing Championships took place at Margate on Mar. 2, when Manston won by 16 points to 11. The results were :—

OFFICERS.

Light-weights.—Flg. Off. Bird (Henlow) beat Plt. Off. Cook (Manston) in the first round. *Welter-weights.*—Flg. Off. F. Larman (Manston) beat Flg. Off. F. Jezzard (Henlow) in the second round. *Middle-weights.*—Plt. Off. Cannon (Manston) beat Flg. Off. Macdonald (Henlow) on points.

AIRMEN.

Bantam-weights.—AC. Callicott (Manston) beat AC. Meyer (Henlow) on points. *Feather-weights.*—AC. Boteler (Manston) beat Cpl. Fort (Henlow) on points. *Light-weights.*—AC. Garrat (Manston) beat AC. Garratt (Henlow) on points. *Welter-weights.*—AC. Page (Manston) beat AC. Perritt (Henlow) on points. *Middle-weights.*—AC. House (Manston) beat AC. Bushnell-Wye (Henlow) in the second round. *Heavy-weights.*—AC. Watts (Henlow) beat AC. Walters (Manston) in the second round.



THE CHAMPIONS.—The Manston Boxing Team who won the R.A.F. Team Championships (Senior Division) by beating Henlow on Mar. 2 by 16 points to 11. The names, from left to right, beginning at the back, are : AC. Walters, L-AC. Page, L-AC. House, Cpl. Weston, D.C.M., Plt. Off. Dook, Flt. Lt. Anne, O.B.E. (Manager), Plt. Off. Cannon, Flg. Off. Lancaster (Team Captain), AC. Garrett, AC. Callicot, and AC. Boteler.

SPECIAL SIX-ROUND CONTESTS.

Gdsm. McCall (Middle-weight champion of Household Brigade) be Cpl. Rollason (Middle-weight champion of the R.A.F.) on points.

Sjt.-Inst. Hoban (Army P.T. Staff) beat AC. Bridge (Bantam-weig champion of the R.A.F.) on points.

Eastchurch R.N.A.S. "Old Boys."

The 8th Reunion Dinner will be held at Connaught Room on Apr. 24 next. Full particulars may be obtained from th Honorary Secretary, 47a, Woodland Street, E.8.

No. 46 Squadron Re-Union Dinner.

The Ninth Annual Re-Union Dinner of No. 46 Squadron, R.A.F will be held at the Blenheim Rooms, Hotel Cecil, at 7.15 for 7.45 Mar. 27. (The same day as the Army v. R.A.F. Rugger match and t Boat Race.)

Tickets, 25s. each, including wine, may be obtained from t Secretary, C. J. Marchant, 10, Bush Lane, E.C.4.

The organising committee consists of Wing Cdr. P. Babington, M.C Lt.-Col. Charles Ensell, Professor R. A. Manby, and Flt. Lt. A. S. Lee, M.C.

AIR AFFAIRS IN PARLIAMENT.

H.Q. STAFF AT HALTON.

In the House of Commons on Feb. 24, in reply to BRIG.-GE CHARTERIS, the SECRETARY OF STATE FOR AIR said that there were commissioned officers employed on administration duties at Halto Of these, 13 were in command and general charge of the 2,000 aircra apprentices and 14 were employed on pay, store, supply and accou ing duties.

CRANWELL CADET TRAINING.

In the House of Commons on Feb. 24, MR. MERRIMAN asked t SECRETARY OF STATE FOR AIR why the estimated gross cost of the edu tion of a cadet at Cranwell for the current financial year is £6 as compared with the corresponding figure of £391 for Sandhurs

SIR S. HOARE : The chief reason for the difference is that, while the are over 500 cadets at Sandhurst, there are under 100 at Cranwe and the distribution of the standing and overhead charges over smaller number naturally results in a higher *per capita* cost. Furth more, the Cranwell cadets receive a higher rate of pay than the at Sandhurst, and the cost of workshop training for them, which com to over £7,000 a year, is considerably higher. The costing figure £615 is based on past expenditure. There have recently been reductio in the Cranwell establishment and the figure will probably be l in the coming year. I may add that in view of the technical instru tion given at the Royal Military Academy at Woolwich, this Ar Establishment is much more nearly comparable to Cranwell than Sandhurst. The cost per cadet at Woolwich is £524 per annum, a the difference between this figure and the £615 per cadet for Cranw is principally due to the fact that the number of cadets at the Roy Military Academy is more than double that at the Royal Air For Cadet College.

COL. WOODCOCK : Does that £615 include the cost of instruction flying ?

SIR S. HOARE : No.

THE BRENNAN HELICOPTER.

In the House of Commons on Feb. 24, in reply to a question MR. ROSE, the SECRETARY OF STATE FOR AIR said that the total amou expended on the experiments in connection with the Brennan he copter was estimated at £55,000. Mr. Brennan's contract expired Mar. 31. He did not think the money had been wasted as valua experience had been gained.

THE AIR MINISTRY.

In the House of Commons on Mar. 3, in reply to LT.-COL. HEADL the SECRETARY OF STATE FOR AIR said that 81 officers who have qu fied as pilots were employed in an administrative capacity at Air Ministry.

THE HEALTH OF THE R.A.F. IN IRAQ.

In the House of Commons on Mar. 3, in reply to SIR H. BRITTA the SECRETARY OF STATE FOR AIR said that he was glad to be able say that the health of the R.A.F. in Iraq had been satisfactory that there had been no undue amount of illness during the p 12 months.

THE AFRICAN FLIGHT.

In the House of Commons on Mar. 3, in reply to SIR H. BRITTAIN, SECRETARY OF STATE FOR AIR said that the flight now being carried by the R.A.F. in Africa would be completed in about three mon and the mileage flown would be approximately 10,000 miles.

A GERMAN SEAPLANE COMPETITION.

The Deutsche Luftfahrtverband, of Bremen, are organisi a seaplane competition to take place on the northern co of Germany in July, 1926.

The object of the competition is to encourage the co struction of a seaworthy, efficient and reliable mail s plane.

Prizes to the value of 250,000 gold marks have been p vided, and other sums are available for special consolati prizes.

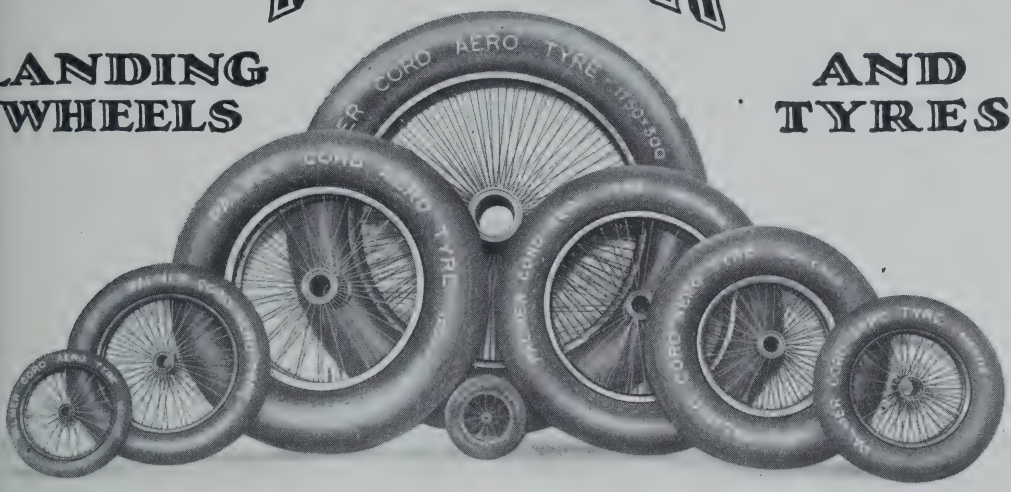
All machines must have been constructed in Germany, foreign engines will be allowed, by special permission.

The competition will consist of flights along the coa technical performance tests, and a seaworthiness test. competition will probably start and finish at Warnemun where the technical and seaworthiness tests will be he Norderney, the great German seaplane station which was well known to the R.N.A.S., is to be an overnight stoppi station.

The flights along the coast will cover a period of fo days, and the total distance to be covered is from 3,001-4,0 kms. Compulsory alighting will take place at several poi which have not yet been determined.

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LANDING WHEELS AND TYRES



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels.

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NIND (346)

MR. COBHAM'S DASH HOME.

Mr. Cobham, Mr. Elliott and Mr. Emmott continue to make good progress on their high-speed flight home from the Cape on their de Havilland 50J.

On Mar. 3, they arrived at Abercorn, where, according to *The Times*, rain and engine trouble delayed them. Thence they flew to Kisumu, a distance of about 650 miles, where they arrived in the evening.

On Mar. 4, they reached Malakal, a distance of 800 miles.

On Mar. 5, they reached Khartoum.

On Mar. 6, they arrived at Aswan, having flown through a terrific sandstorm. During the flight, according to a dispatch to *The Daily Mail* from Mr. Cobham, they were nearly lost through losing the Nile in the sandstorm. Now that is really very naughty of Mr. Cobham. In his book (reviewed in this issue), he states that after his adventure in the fog at Venice, with Mr. Sharpe, he would not take such risks again. And here he is doing the same sort of thing again. But perhaps *The Daily Mail* wired asking urgently for a thrill, and so the sandstorm got up to oblige. One awaits the revised version in Mr. Cobham's next book.

On Mar. 7, the party arrived at Cairo, having flown from Cape Town in 9¾ days, one day having been lost at Ndola.

On Mar. 8 the departure was postponed owing to a head-on gale.

A SECOND CAMEO OF THE LONDON-CAPE TOWN FLIGHT.

By A. B. Elliott.

THE ARRIVAL.

"Time we were there," mutters the Engineer. Replacing his watch and glancing ahead he scans the horizon for the first glimpse of Bulawayo.

It is a beautiful day, and the sky cloudless, azure blue, and we have faithfully followed the winding brown streak through the jungle—the railway to the Cape—our truest guide.

Each side of the new track stretches the jungle as far as the eye can see, green and featureless, teeming with game, and one wonders what hardships befell those who fought their way through it all.

Bulawayo.—A dig in the back wakes the Photographer who wonders what has happened until a glance out of the cabin shows us over the aerodrome.

We circle twice, losing height, two smoke fires going. They've done the job well down there. Crowds of people and cars all lined up behind the barriers.

We glide in to land, the wheels touch, the white circle flashes by and the tail skid trails over the hard ground. We taxi towards the crowd, already they have broken through the barriers, and swarm across the aerodrome. Crowds surround us, we can get no further. We stop the engine and the crowd gives a welcoming cheer.

"Come on, Emmott, let's get out; they've gone mad," suggests Engineer.

We get out onto the plane, eager hands reach up to us in greeting, cameras click and at last Pilot, Engineer, and Photographer are on *terra firma*.

By this time the Police have arrived and the crowd stands back to make room for those concerned in the Official welcome. A gray-haired gentleman comes forward—"Good morning, Mr. Cobham; I'm the Mayor. Welcome to Bulawayo. How do you do?"

Numerous introductions follow between Mayoress, Town Clerk, Magistrate, Town Engineer, Chief of Police, etc., and the three aviators.

"Did you enjoy the trip down, Mr. Cobham?" "Oh, yes, very simple you know, just followed the railway line."

"Could you see the smoke?"

"Yes, rather, there was plenty of it."

"Just a minute, please," requests someone, and we find ourselves facing a big press camera and in the hush that ensues as we pose one hears the comments from the crowd.

"Isn't it a small one." "But where do they get in?" "Isn't it clean?" "Yes, that's him with the moustache."

That's over; someone pushes towards Elliott, panting and blowing, and in hushed tone confides, "I'm Castrol's man, how much will you want?"

Someone pulls the Engineer's sleeve, a little upturned face pleads, "Will you sign my book?"

"Righto, Son," and, as more books are thrust forward, Engineer writes his name with the honoured one's.

"Well, now, Mr. Cobham, are you ready?"

"Righto," replies the pilot. Then, "Where's Elliott?"

"Yes," replies Elliott.

"Look here, I'll leave you to fix things up then this gentleman will bring you along. Where's Emmott?"

"Oh, he's getting some pictures," replies Engineer.

They go, and Engineer breathes freely. Now for work.

A few words to the Police to keep the crowd from the tail and wings, and he proceeds to unload bags and cameras, cover the engine and airscrew, picket down and answer sundry questions about the trip.

An old lady forces her way through the crowd. "Let congratulate you, son. You've done your bit, too, and feel proud of you because you come from the Old Country

The Photographer returns. "Get any pictures?" as Engineer. "Yes, sure," he replies.

"Ready to beat it yet?" By mutual consent we depa through the gazing crowd and drive to the hotel.

We arrive at our room and Engineer flops on a bed, me tates for a minute, and says, "Well, Emmott, some rece tion."

"Yes," he says, "and who were all those big people were introduced to?"

"Goodness knows, old chap," replies Elliott. "I can't member the name of one of them."

MR. COBHAM'S BOOK.

["Skyways," by Alan J. Cobham (314+x pp.), published 15s. net, Nisbet.]

Before one started to read Mr. Alan Cobham's book o rather imagined that it was going to be a repetition fights with eagles and races with clouds such as we ha been accustomed to read in the daily Press for so lon Therefore it is with the greatest possible pleasure that o can say right at the beginning that here is a book that well worth reading from cover to cover.

Mr Cobham has entirely abandoned his newspaper sty and has evidently realised that he was not writing down the level of intelligence of a daily newspaper editor. O says "editor" distinctly, because one has never come acro anybody except the editors of the daily papers who real enjoys that sort of style. They seem to be a race apart.

The book is of absorbing interest all through. He hims fades into the background and does not force himself u necessarily into the book at all. It is just a record of fi achievement simply told. There is a foreword by Sir Seft Brancker which rather made one think that the book w going to be a sort of mutual admiration record, but fort nately this was not so.

The book is divided into five parts. The first part dea with the early adventures of Mr. Cobham when he was pil to the Berkshire Aviation Company. This is the first tim that a complete history of this important stage of aviati has been told and Mr. Cobham makes it both interesti and amusing and at the same time exceedingly instructiv Various ways and means for attracting business and var ing and trying conditions under which they worked are a adequately described.

There is one chapter in this for which one thinks th Mr. Cobham might have chosen a better title, and that one in which he describes how he met the future (and presen Mrs. Cobham. He heads this: *Romance—And Disaste* One has it on the authority of Mrs. Cobham herself that sh is going to speak pretty severely to Alan about this whe he comes home. One should certainly explain that th disaster was to one of the aeroplanes of the Berkshire Com pany which was written off and was certainly nothing wha ever to do with Mrs. Cobham.

The next part is devoted to the period which Mr. Cobha spent as pilot to the Airco Company (Aerial Photograph Department), on the business of which Mr. Cobham covere most of the country with Mr. MacLennan (now of the Surre Flying Services), as photographer. He says in describin his position before he took up this job:—"All I possesse at the moment was thirty shillings, which I had left in th bank to prevent the closing of the account, and another fort five in my pocket." After making a success of this he joine the de Havilland Company and all his numerous big fligh and how they came into being are then described.

It was during the Spring of 1921 that he first began t realise the call there was for air taxis, and one realise from the first how much of his success has been due to goo organisation. Had circumstances been different, Mr. Co ham might have made a very brilliant staff officer. H astute moves when flying with photographs for a newspape in order to beat a rival all make good reading.

It was on Le Bourgêt Aerodrome that he first met M Lucien Sharpe with whom he made so many long flight It is evident that Mr. Sharpe by his patronisation of aer planes for travel will go down to history as one of th pioneers of commercial aviation.

The staff work of Mr. Cobham's flight from Bucarest t bring back photographs of a royal wedding there for *Th Daily Mirror* and his ruses to prevent the rival photograph organisation from knowing of his presence all bring out h wonderful gift for organisation.

One will close this review with the following little incide of a flight to Rome with Sir Sefton Brancker which wi amuse everybody who knows the principal actors in it:- "We arrived in Rome just before midnight, much to th relief of those who were awaiting us. Our non-appearanc had caused a little alarm, and incidentally provided materi

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for a very amusing story. Mrs. Cobham (who had gone by train), on arriving in Rome had gone direct to the Hotel de Russie, and it so happened that most of the Air Ministry officials, including Sir Sefton Brancker, had booked rooms there also. Not finding me there to meet her she inquired from the manager whether Sir Sefton's party had arrived, and was somewhat surprised when she was told we had not been heard of.

"About half-an-hour later an attaché from the British Embassy rang up also to inquire whether Sir Sefton Brancker had arrived.

"The manager replied, 'No, sir, the General hasn't, but the lady has.'"

The book is thoroughly well illustrated all through w photographs by the author and others. Really the only b thing in the book is the portrait of Mr. Cobham used for t frontispiece, which is distinctly libellous. If this book h done nothing else it has shown us the real Alan Cobham a not the one who descends to the level of newspaper edito

Most of the book Mr. Cobham dictated very rapidly wh walking up and down the room, and Mrs. Cobham took down on a typewriter, which shows Mrs. Cobham's stayi power.

Perhaps a better title for the book would have been "Sk way" instead of "Skyways." There is quite a lot of diff ence.—G. D.

THE AEROPLANE CLUBS.

The London Aeroplane Club.

February was a good month for flying. Flying instruction was given to the members on 23 days during the month. One hundred and seventy-seven flights were made of which 126 were dual, 29 solo and 22 test. All these flights were made on the one D.H. Moth G-EBLI.

For the week ending Mar. 7 the total flying time was 20 hrs. 10 mins.

The following members had flying instruction:—G. Quirk, T. W. Eady, A. R. Ogston, J. H Saffery, E. A. Cook, W. Hay, P. G. Lucas, G. H. Craig, K. V. Wright, Major K. M. Beaumont, T. H. O. Richardson, O. J. Tapper, E. S. Brough, B. B. Tucker, R. C. Presland, Mrs. Eliott-Lynn, Sir John Rhodes, E. D Moss, L. Anderson, R. Malcolm, J. C. Barros, G. N. Howe, R. P. Cooper, J. S. M. Michie, G. Vlasto, M. A. Douglas Hamilton.

The following members did solo flying:—N. H. Jones, Mrs. Eliott-Lynn, Major K. M. Beaumont, G. N. Warwick, Sq. Ldr. M. E. A. Wright.

On Monday, Mar. 1, N. H. Jones successfully passed the tests for his Aviator's Certificate.

On Tuesday, Mar. 2, D. H. Kittell, who has recently acquired a D.H. Moth of his own, went up to carry out the tests for his Certificate. During the height test the weather clouded over and he was obliged to make a landing in Essex. Having ascertained his direction he flew back to the aerodrome later in the afternoon.

Mrs. Eliott-Lynn has recently gone through the Technical Examination for a "B" licence and has passed in the subjects of Navigation and Meteorology, also in the examinations on flying machines, engines and instruments in relation to the D.H. Moth type.

The following donations have been promised towards the third D.H. Moth machine which has been ordered for the London Aeroplane Club:—Petroleum Distributing Companies, £200; E. J. Jones, £150; Lieut.-Col. M. O. Darby, £50; Lieut.-Col. J. Barrett-Lennard, £50; Sir John Rhodes, £25; Major K. M. Beaumont, £20; W. Hay, £20; Mrs. S. C. Eliott-Lynn, £10; E. S Brough, £5; D. Kittell, £5; J. S. M. Michie, £3; Sq. Ldr. M. E. A. Wright, £2; G. Quirk, £2; E. A. Cook, £2; G. H. Craig, £2; A. R. Ogston, £1; G. N. Warwick, £1; J. H. Saffery, £1; R. C. Presland, £1; T. H. O. Richardson, £1; T. W. Eady, £1; P. G. Lucas, £1; O. J. Tapper, £1; K. V. Wright, £1; Total to date, £555.

The Lancashire Aero Club.

Owing to gales and high wind flying has been possible on only Tuesday, Friday and Sunday, and even on these days for very short intervals. Machines in use G-EBLV and G-EBMQ.

Mr. Stack gave instruction to H. Hardy 1 hr., C. Agar 1 hr. 30 mins., B. Smith 1 hr. 50 mins., R. Wade 50 mins., D. Dyson, 10 mins., C. Brown 20 mins. Mr. Cantrill gave dual to S. Parker 30 mins, J. Leeming 25 mins. Solo flights by A. Goodfellow 30 mins., M. Lacayo 1 hr. 15 mins., J. Cantrill 25 mins.

Total dual 6 hrs. 35 mins. Total solo 2 hrs. 10 mins. Tests occupied 1 hr. 10 mins. Total time flown 9 hrs. 55 mins.

The third Annual General Meeting was held in Manchester on Mar. 2, and the following elected to act as Committee for the year: Messrs. A. Goodfellow, J. Cantrill, J. Scholes, R. Williams, H. Stern, J. Leeming, T. Prince, H. Grant, M. Lacayo. Mr. Wood remains as Secretary and Mr. Leeming as Chairman.

It was announced that owing to the generosity of Colonel Groves work on the hangar was to be commenced at once. A proper hangar is the Club's greatest need, and this assistance from Colonel Groves was most acceptable.

A special tribute was paid to the work done voluntarily by Messrs. Cantrill and Scholes as Instructors. These gentlemen went to Upavon for the Instructors' Course and have been at the aerodrome teaching pupils every week-end since September. They are busy men who have to travel from the other side of Manchester to Woodford and this must have been a great call on their spare time. Members realising this expressed their appreciation most enthusiastically.

Tickets for the Dinner-Dance at the Midland Hotel on Mar. 12 are now entirely sold out and money is being returned to all members who have applied since Mar. 6.

The Newcastle-upon-Tyne Aero Club.

Total flying time, 10 hrs. 35 mins., made up of Dual Instruction with Major Packman, 8 hrs. 15 mins; Solo ("A" Pilots), 1 hr 15 mins.; Passenger, 1 hr. 05 mins

It blew a gale throughout the week, and from Monday to Thursday inclusive was added heavy snowstorms. During the first four days of the week only two hours' dual was possible, one hour each Monday and Thursday. Except for a short period early on Saturday and Sunday mornings no solo flying was attempted. Only one machine is in service at present.

The following members flew under instruction:—Miss Lenthart, Mrs. Marcks, Mr. Twine, Mr. Peacock, Mr. C. Thompson, Mr Campbell, Mr. Bainbridge, Mr. W. Todd, Mr. Bruce.

Passengers:—Mr. Davidson, Mr. Penrith, Mr. Grundy.

Soli:—Mr. W. Baxter Ellis and Mr. R. N. Thompson.

On Friday, unfortunately a quiet day at the aerodrome at all times, Mr. Ellis took out the Gull, but as the instruments are not yet fitted and on account of the strong wind, which, however, was not as bad as on the other days of the week, he confined himself to a couple of "straights." Mr. Heppell and Major Packman also had a straight each. It was impossible, owing to the strength of the wind, to taxi back after a flight and the machine had to be wheeled back acr the aerodrome on each occasion, which was reminiscent of flying ab 1909. Altogether it is a very wonderful machine and those who fou much in it to cause amusement when it was first delivered in a mantled condition, are either openly converted or discreetly silent.

The following are extracts from the Club's Fourth Monti Circular:—

Unfavourable weather was again the rule during February, it is highly satisfactory that Newcastle is once more able to cla the largest aggregate of hours flown among the Clubs. Details are follows:—Dual instruction, 91 flights (50 hrs. 43 mins.); Solo trainir 4 flights (1 hr. 15 mins.); Pilot members' solo, 23 flights (13 hrs. mins.); Test and passenger, 11 flights (2 hrs. 50 mins.); Totals, flights (68 hrs. 15 mins.).

During nine of the flights by pilot members, totalling 4 hrs. mins., members and visitors were carried as passengers.

Two members, Miss C. R. Leathart and Mr. T. R. MacMillan, w passed out for solo flying during the month.

Bernicia is now back on service, having been flown up from t de Havilland works on the 26th by Major Packman, accompanied Mr. Brown. Owing to bad visibility throughout the journey, nec sitating flying at between 200 and 300 feet, it was an exceedingly go performance to get through, but having established a reputation flying in all weathers, Major Packman was determined to carry the flight as arranged at all costs. A call for fuel was made at Sh burn Aerodrome, the headquarters of the Yorkshire Aero Club. possible attention and hospitality were bestowed upon the travell by both the London and Yorks. Clubs.

This being the first time that one Club's machine has visited t other Club aerodromes, it is a noteworthy event, and it is hoped th soon aeroplanes will be sufficiently plentiful and pilot membe sufficiently skilled to make it a regular practice to visit friends other Clubs.

(Note.—When Mr. Baxter Ellis and Mr. Harrison flew from Lond last year the Yorkshire Club had not obtained Sherburn Aerodrom

Will prospective Owner Pilots please note that arrangements already being considered for an Inter-Club Races during the prese season.

It is unfortunate that at the last moment before the return *Bernicia*, *Novacastria* should have been damaged when being land by a member flying solo on the 24th. The repairs will be carri out at the aerodrome, so that a considerable saving of time will effected.

A very generous donation of £200 to each Club has been ma by the Petrol Distributing Companies:—Anglo-American Oil Co. Lt British Petroleum Co. Ltd., Redline Motor Spirit Co. Ltd., and She Mex Ltd. It is a condition, however, that before the money can handed over the Clubs must satisfy the Royal Aero Club that they ha obtained from other sources the balance necessary to purchase a p aeroplane. It is hoped that it will be possible to raise the requir amount locally shortly, and an appeal for funds is being arrange

Subscriptions.—The requirements of the Articles of Association the Club necessitate arranging that the fiancial year terminate Feb. 28. Subscriptions for the year 1926-1927, therefore, become du and as funds are urgently needed to meet present liabilities and gener expenses during the season now commenced, it is hoped that membe will forward the amount of their subscription at once. Those who pa the full amount of subscription according to the class of membe ship held, will be credited with half of the sum this year, as alrea announced.

Badminton Club.—A complete Badminton outfit has been present to the Club by a member. The court is already marked out and challenge received from a local Club who wish to play a match again six members of this Club. Members who wish to join the Club shou place their names on the list to be found in the hangar.

Membership Badges.—For reasons of economy, it is decided th the present Badges should be retained during the coming year. T original issue is now exhausted and a further supply of simil badges has been ordered and a charge to new members of 2s. 6 will be made in respect of these, founder memberships havi already been taken up

Registered Office.—The Registered Office of the Club has now be transferred to the aerodrome and all future communications should addressed there. Telephone: Cramlington 9.

(Signed) A. H. Bell, Secretary.

The Yorkshire Aeroplane Club

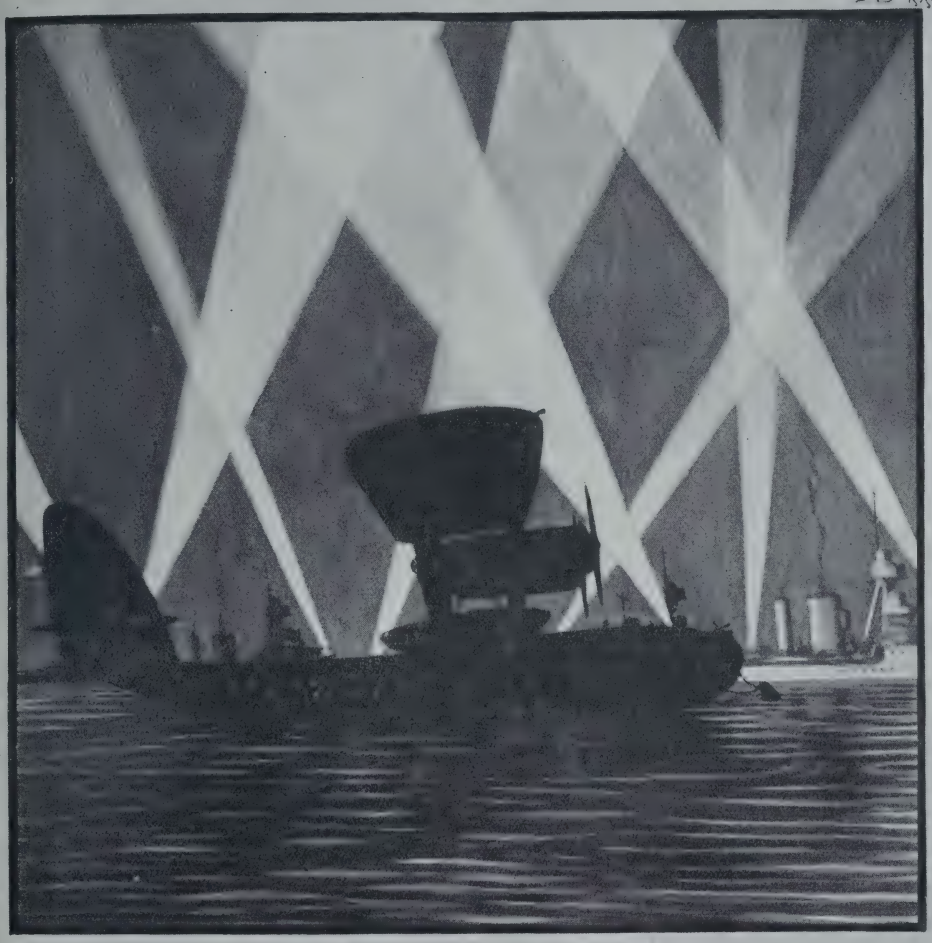
Flying has been quite impossible on five days this week, Marc being determined to live up to its reputation, together with wh the natives call "Lamb Storms," which vary from a small show to a complete blizzard.

On Sunday we managed to get in a little flying, inspired by a vis from Mr. F. L. Barnard, who was invited to use our machine, whic he did to some purpose for the space of 15 minutes.

Other flying:—Test, 10 mins.; Dual, nil; Joy-rides, 30 mins.; Tota 55 mins.

The following members had flights: Mr. and Mrs. Waddilove, Mr Hepworth, and Mr Lax.

To encourage the social side of the Club a dance will be he shortly in Bradford, under the arrangement of the Secretary and M Barraclough.



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THE D.H.50 AND AIR LINE WORK.

Some little time ago in discoursing at large on air line work one made the remark that although the D.H.50 is one of the most delightful flying machines in the World it is not a commercial proposition for an air line. Apparently this remark has been misunderstood by some readers of The Aeroplane who have drawn from it the conclusion that one does not regard the D.H.50 as a commercial proposition at all. Therefore one would like to explain exactly what one meant in that paragraph, for the benefit of those who either do not understand what was implied, or who may have the phrase, torn from its context, thrust at them by competitors of other nations.

If one explained exactly what every phrase in this paper means without relying on readers' understanding what the phrases imply, one's already lengthy articles would have to be expanded to about three times their present length. But in this instance an explanation seems worth while, if only because it entails the discussion of air line work from a point of view rather different from that hitherto considered.

What Is An Air Line?

People are rather apt to consider an air line as being any kind of an air service which provides air transport from one point to another, regardless of the number of passengers carried and regardless of the regularity of the service. As a matter of fact air lines differ from one another just as much as do railway lines or motor-'bus routes. In that particular article one was discussing what might be called main line air services. On such lines the machines used should obviously be fairly large machines carrying as many passengers as possible for each engine and each pilot employed.

Considered purely commercially the pilot, and the mechanic or spare pilot, if one is carried, are part of the mechanism, or power plant, of the machine. And their wages are in reality a capital charge on the running costs, just like the interest on the purchase cost of the aeroplane and engine. Consequently the more passengers and the greater the amount of goods one can carry for each pilot and/or mechanic and engine-horse power, the more nearly the machine employed becomes a commercial proposition.

A Railway Analogy.

Anyone will easily perceive that on a regularly established main line railway, on which express trains carrying three hundred passengers or more are drawn by one engine with one driver and one fireman it would be foolish to run short trains carrying only forty or fifty people, and still needing a driver and fireman to each engine, even though the engine itself might be smaller. Also there would be endless complication in having so many small units running to carry the same number of passengers.

But when one comes to consider the branch lines on which the number of passengers and the amount of goods are so small that only one small train per day can be run, it would be equally absurd to attempt to run a main line corridor express with a big engine and accommodation for hundreds of people.

But the railway companies, as the result of experience, and incidentally the competition of motor-'bus routes, have in many cases now evolved a special type of vehicle which they call a motor train, for use on these branch lines. That consists of an engine and passenger coach built as one vehicle, which can be employed either as a single vehicle or to haul, or push, an extra coach if the traffic at that period of the day needs it.

Here we have an almost exact analogy for our air line work. The big main line expresses correspond to, let us say, the two-engined and three-engined Handley Pages and the three-engined Junkers air liners at present in use. The D.H.18s and D.H.34s, which are, or are becoming, obsolete correspond to the kinds of high-speed trains which used to be run on our railways before the present big corridor trains came into being.

The branch-line trains of the old type, with separate locomotives and odd assortments of antiquated carriages, may be compared with the war-time D.H.9s and Bristol Fighters and other things which were more or less faked up as passenger machines in the days of Air Transport and Travel Limited. And the D.H.50 may be compared with these smart little motor-trains which are now run on branch lines.

However, one should always remember that owing to the infrequency of the service and the small number of passengers carried a branch-line railway is bound to cost more per passenger to run than does a main line with a constant stream of local stopping trains and high-speed expresses along it. And therefore a branch line with its heavy initial cost of permanent way and its necessary staffs at stations and the costs of stations themselves, could not be regarded as a commercial proposition in itself, if it were run apart from its main line. That is very much what one meant when one said that the D.H.50 with its one pilot, and necessary mechanical attention and so forth, to carry three or four passengers with 240 h.p. is not regarded as a commercial proposition from the air line point of view. One could not regard these little motor trains as a commercial proposition from a main line traffic point of view.

There is a further similarity to be found in railway work if one considers the railways which are run in out-of-the-way parts of the World. Take for example the lines which run across Central Africa, or even the biggest lines in South Africa from Cape Town to Pretoria and Johannesburg.

It would never pay to lay down in those countries a four-track permanent way such as is used on the English main lines or the great German and French lines, to carry high-speed heavy express trains. The population is small and the goods traffic is small, consequently a single line is laid generally at vast expense, and only one or two trains a day can be run over it. Yet the cost to the railways of carrying each passenger over such lines is very much higher than the cost per passenger on the most luxurious English or Continental lines.

One believes that practically all those lines in the Overseas Dominions are only kept alive by Government subsidies. Consequently the trains on those lines are not commercial propositions from a railway point of view. But they are very much commercial propositions from the national point of view.

In an exactly similar way, to take those two wonderfully efficient Australian air lines, Major Norman Brearley's Western Australian Airways and the Queensland and Northern Territories Air Line as examples, they could not as yet afford to run new de Havilland 66s, with their three Bristol Jupiter engines of 450 h.p. apiece.

There is not yet enough traffic on the lines to fill such machines, and enormous expense would be incurred in preparing aerodromes and sheds big enough for such air vehicles.



BUILDING UNDER LICENSE.—De Havilland 50s in course of construction at the Aero Works at Prague.

it does pay such lines very well to use D.H.50s because y only require small sheds and small aerodromes and can got in and out of almost any kind of a landing ground.

somewhat similar analogy can be found in the motor nibus business. The big London 'buses carrying their y or sixty passengers apiece would not be a com-rcial proposition if they were put onto the country routes ich link up agricultural villages with their county towns. ey would be much too expensive to run for the amount traffic which they would carry. On the other hand the ll solid motor-'buses, such as those built by the Bristol mway and Carriage Company, which Colonel Sydney ith, late R.A.F., controls so efficiently, are very much a mmercial proposition from the country-road point of view, is shown by the way in which they pervade every road the West of England. Yet those same 'buses if taken off ir country roads and put into London traffic to compete h the big vehicles of the London General Omnibus Com-y would not be a commercial proposition.

o carry the analogy still further it is well to remember t besides their main line expresses the railway companies prepared to supply special trains for people who are pared to pay for them, which trains, with an express ine and a single luxurious saloon, will make as good time r their established routes as the regular main line ex-sses. And somewhat similarly the London General nibus Company keeps a number of smaller vehicles which s prepared to hire out for private parties and so forth. hese special trains and these special vehicles pay for them-es because they naturally earn more money per passenger en specially hired than is paid by the regular passengers in ordinary way. And so on their special jobs they become mmercial propositions although they cost more than the icles on the regular service.

n the same way the D.H.50s used for special hire work become commercial propositions as auxiliaries to main line routes.

fter all, the proof of the pudding is in the eating, and re are at least thirty D.H.50s in use or about to be put o use in various parts of the World. It is quite interesting race where these are employed.

n the first place Imperial Airways have two of them, in one which one flew from Berlin to Amsterdam last year. These used as auxiliaries to the main line air expresses of perial Airways Ltd. They are hired for special flights by ple who want to get somewhere in a hurry, possibly off the n line, or who want to get through on the main line at hour when the regular machines do not suit.

hree D.H.50s are in use by Western Australian Airways . and one by the Queensland and Northern Territory ial Services Ltd. Also three have been sold to the stralian Aerial Services Ltd. which has been recently estab-ed.

ll these companies have recently acquired manufacturing ights from the de Havilland Company and between them y have laid down four more D.H.50s to be built in stralia.

nother D.H.50 has been supplied to the Australian Govern-nt for the use of Colonel Brinsmead, the Controller of il Aviation, who will use it for inspection and survey work. l another has just been completed for the Royal Australian Force, which if newspaper reports are to be believed will used by Lord Stonehaven, the new Governor-General of stralia, better known in this country as Major John Baird, ne time Under-Secretary for Air.

Progress.

he de Havilland Company's own demonstration machine been to South Africa, where there are hopes of convert-the South Africans to an understanding of the uses of transport. And nothing is more likely to convert them n demonstrations with a D.H.50.

he Belgian Company known as the S.A.B.C.A. has built ee D.H.50s under licence. And these are being used in Belgian Congo by the sister company, the S.A.B.E.N.A. en more, as described in The Aeroplane, are being built the Aero Company of Prague for use on Czecho-Slovakian lines, where they are bound to be of the highest value in eloping new air routes. These machines will be fitted with Walter B.M.W. engine. They have been selected for the pose after exhaustive trials with the one which was sup-d to the Czecho-Slovakian Ministry of Public Works a le over a year ago.

lthough thirty machines of one type is perhaps a small nber compared with the production numbers of certain itary types one doubts whether it can have been exceeded any other types of purely commercial aeroplanes. And it tainly proves that under suitable circumstances the D.H.50 uld be regarded as a commercial proposition.

aturally the cost of operating a D.H.50 varies consider-y according to circumstances. For example, the de Havil-d Company themselves running the machines from their own aerodrome and their own workshops, which exist and cost the same whether the D.H.50s are operated or not, can afford to let the D.H.50s out on hire at a smaller price per mile than that which say the Australian air lines or even Imperial Airways Ltd. could afford to accept, seeing that in those cases the D.H.50s have to pay their own proportion of aerodrome and workshop charges. But because the demand exists for air transport by a machine of precisely the D.H.50 capacity, that is to say, fuel capacity for four hours' flying and a useful load of 1,130 lbs. (four passengers and luggage) a higher price can be got than could be demanded for the hire of machines operating from London where so many competing means of conveyance are available.



AN APOSTLE OF AVIATION.—A snapshot impression of Major H. Hemming, of the Aircraft Operating Co. Ltd., who besides being one of the leading exponents of Aerial Survey work, is the chief motive power in the negotiations with Czecho-Slovakia. He is a regular and skilful pilot of all types of de Havilland aeroplanes.

At the Start.

There is no doubt that for starting a new air line the D.H.50 is a most economical machine. Apart from having a low purchase price in comparison with bigger machines, it has the advantage of being able to land in very small areas and so can be used safely over undeveloped routes where big aerodromes do not exist. And because of its ability to land almost anywhere its insurance rates are low.

When once a line is established and there is a steady supply of passengers and freight, then bigger machines can be used. But in that case, it would not be economical to use six or eight or ten-seaters. After the D.H.50 the next step should be the big three-engined machines with fifteen or twenty or more passengers.

But when air routes are being run over large tracts of little inhabited country, or when starting undeveloped routes over well-inhabited country, it is decidedly a mistake to put all one's eggs in one basket. One would certainly prefer to use, for example, eight D.H.50s rather than two big three-engined machines. By thus dividing a service into small units, a forced landing, or even a crash, would not affect the regularity of the service to the same extent as if one of the big machines were put out of action.

Consequently although the D.H.50 is not a commercial proposition for a fully developed air line with a big demand for accommodation for goods and passengers, flying along a route with proper ground equipment and frequent large aerodromes, it is very much a commercial proposition in the opening of new routes and in the running of branches, for special journeys, and for development work generally.

Moreover for those who like flying, as one does oneself when one can trust the pilot and when one is flying over reasonably open country, the D.H.50 is a particularly pleasing vehicle.

It has a curious liveliness in the air which so far from causing air sickness is far more likely to prevent it. Some people are made train-sick by the heave and sway of a corridor coach, but can travel perfectly happily in a fast car. And people who will be very seasick on a big passenger steamer are quite happy in a yacht. Personally one always regards the D.H.50 as being in the same class as the best type of sporting car.

Changing from a D.H.50 to a big multiple-engined aeroplane is just like changing from a Bentley sports car to a motor 'bus. There is certainly no nicer aeroplane in which to fly. If The Aeroplane newspaper were itself a commercial proposition one would certainly keep a tame D.H.50 for one's own use. And if one were running an air line one would equally certainly maintain a proportion of D.H.50s for special duties and for development work along new routes.—C. G. G.

JUNKERS IN JAPAN.

A Junkers F.13 monoplane has been converted into an ambulance aeroplane by the Japanese Government, and the result of the tests have been very satisfactory.

This conversion has been undertaken by the Japanese Government as a result of the excellent experiences gained by the Italian and Spanish armies with similarly converted aeroplanes.

THE SHORT MUSSEL LIGHT SEAPLANE.

Short Bros. have at present under construction at their works at Rochester a two-seater float seaplane, largely constructed of duralumin, and fitted with an A.D.C. Cirrus engine. The marked success of the D.H. Moth as a land machine has led several people to consider the possibility of a two-seat seaplane with the same engine, but when the question of float weight is investigated it becomes apparent that there are very considerable difficulties to be encountered.

The very successful results attained by Short Bros. with light alloy construction, particularly in regard to the production of strong yet extremely light duralumin floats, led to the conclusion that with careful structural design a two-seater seaplane with the Cirrus engine could be produced at a weight which would permit of a satisfactory all-round performance.

The Short Mussel, which is now nearing completion, is the result. The Mussel is a twin-float tractor low-wing monoplane, with tandem seating, built, so far as the main structural members are concerned, of metal, but using wood for some of the less highly-stressed parts.

The fuselage is an oval section duralumin monocoque structure, consisting of a skin of thin sheet rivetted to channel section formers. The skin is stiffened locally with longitudinal trough section strips rivetted to the skin plates between formers. These longitudinals are broken at the formers and are not in any sense longerons—the skin is the main stress-bearing member and the longtudinals are purely stiffeners. The fuselage is in two parts, and may be taken apart just behind the rear seat by undoing a series of bolts. Thus the whole interior of the body can easily be reached for inspection, painting, etc.

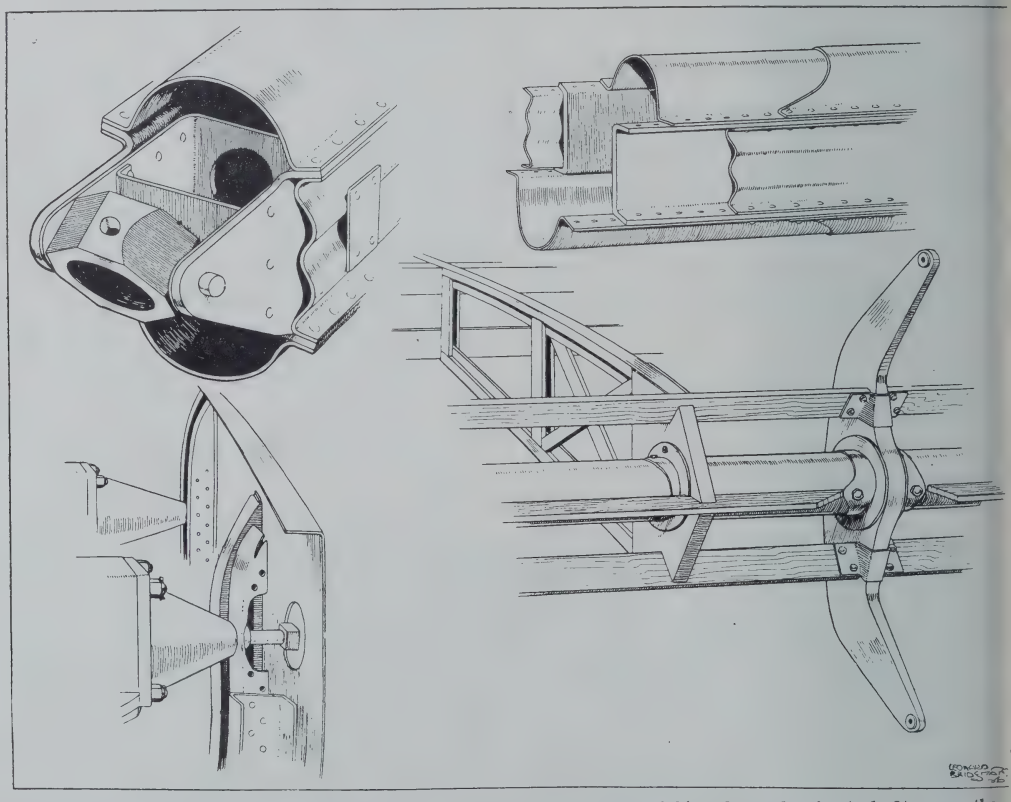
The Cirrus engine is mounted directly from the fuselage shell without the use of any special engine bearers, or the like. The brackets normally attached to the crankcase are removed and replaced by duralumin cones, which drop i special channel section formers in the fore end of the bo and a long bolt, whose head projects to the outside of fuselage skin, is screwed into these cones and holds the gine in place.

Wing roots, built on through-going steel tube spars, built on to the bottom of the fuselage. The wings are tached to the root spars by hinged joints of very simple fo and are braced by inclined struts running down from the of the fuselage. The wings are of a thick section, which practically a stationary C.P. (R.A.F. 33). The wing spars of duralumin of a simple corrugated section, with side and members built up of a number of laminae, in such a way t the wall thickness varies with the stress along the spar. ribs are of spruce.

Ailerons, tail plane and elevators are of conventional fo and of composite structure, duralumin being used for sp and spruce for ribs. The structure of one aileron, show the main tube spar, the wooden ribs and fairing pieces, gi an idea of the general form of these items.

The floats, which are of the single-step, rounded-top, lo tailed type, are entirely constructed of duralumin, and astonishingly light. In general they follow the same st tural principles as are employed in the fuselage structu The skin is the principal stress-carrying member. Form and light longitudinal stiffeners are used to keep the s up to its work. The step is very ingeniously arranged so t the whole of the joints are accessible for inspection and pa ing, from inside as well as outside, while at the same t the continuity of the skin structure is maintained.

The whole machine is extremely clean, and, thanks to care taken in detailed design, it is very accessible in ev part, and should be relatively cheap, both to produce an maintain.—W. H. S.



THE SHORT MUSSEL.—Top left, wing spar end joint. The hexagonal hinged member is steel, fits over the steel tube wing root spar and is bolted thereto. This hinge is supported by substantial steel strips which are built into the duralumin spar, as shown. Top right, a section of the duralumin spars, showing how the thickness of the wall is varied by lamination.
Bottom left, the engine mounting, showing the conical light alloy bracket attached to the Cirrus crankcase. The channel formers and skin of the fuselage are shown broken away to indicate how the special fixing bolt passes to the outside of the skin. Bottom right, the aileron construction. The main spar is a duralumin tube which is faired out to the full wing section by light spruce strips. The ribs are supported by light steel collars pinned to the tube and the rib-end blocks, and the operating lever is similarly supported.

A PROJECTED AEROPLANE CLUB IN ESSEX.

A communication was received on Feb. 23 from Mr. W. Knox, of 21, Airlie Gardens, Ilford, Essex, stating that a new aeroplane club, to be known as the South of England Aeroplane Club, is in course of formation. Mr. Knox's communication was dated Feb. 23, and up to the present no reply has been received to a letter from THE AEROPLANE, dated Feb. 24, asking for further particulars.

On Mar. 2, *The Morning Post* published the definite statement that the South of England Aeroplane Club has been formed. Membership is open to British subjects of either sex who are more than 18 years old. Avro machines with 110 h.p. Le Rhône engines and De Havilland Moths with 90 h.p. Cirrus engines will be used, and negotiations are in progress for the purchase of an aerodrome.

The annual subscription is £5 5s. for members desirous of having flying practice and tuition, and the charges for flying will be £1 10s. per flying hour for the Moths and £3 per flying hour for the Avros.

The objects of the Club appear to be somewhat pretentious, particularly as the output of Moths is booked for about six months ahead.

Before joining the club would-be members are advised to inform themselves fully as to the status of those who are forming the club. In all times of threatened booms in any kind of sport there are always people who try to form clubs, either for personal aggrandisement or financial gain or even for pure love of that sport, but have not the ability or the money to put the suggested club on a sound footing. Therefore, before committing oneself, it is always well to know something of the promoters.

Mr. Knox in his letter signs himself "W. Knox, Flying Officer." One cannot find any Mr. Knox with a single initial in the Air Force list, either on the Active List or the Reserve, so presumably he has retired from the Service.

If any further particulars concerning the projected club or its promoters are forthcoming they will be published with pleasure.

AMERICAN NEWS.

Unfortunately there is never sufficient space available in THE AEROPLANE to deal at all adequately with American news. At the present stage of the development of international aviation American progress and American aeronautical politics are very nearly as important to us in this country as are our own. Therefore one strongly recommends everybody who desires to be well informed on international developments to read regularly Mr. Lester Gardner's paper, *Aviation*, which is the leading American aeronautical publication.

The address of *Aviation* is 225 Fourth Avenue, N.Y. The proprietor will be pleased to send specimen copies to readers of THE AEROPLANE.

THE KARACHI-CROYDON ATTEMPT.

Flt. Lt. J. Oliver, A.F.C., and Flg. Off. W. A. D. Brook, who left Karachi on Mar. 1, in an attempt to fly to London in five days, had a forced landing at Pasni (about 200 miles from Karachi). They were able to start again on the following morning, but owing to engine failure had another forced landing at Surag, about 70 miles east of Jask, on the Persian Gulf.

Flt. Lt. Oliver has abandoned the flight. One hopes that he will go back to Karachi and will start afresh.

JUPITER ENGINES IN ITALY.

The well-known motor manufacturers, Alfa-Romeo, have taken over the licence to construct the Bristol Jupiter engine in Italy, and are engaged on the production of a batch of engines for the Italian Government.

The same company have also taken up the construction of Fokker aircraft and the first example, a two-seater military machine, of new design and fitted with the 400 h.p. Jupiter engine, is now ready for test.

The first Jupiter-engined Dewoitine all-metal monoplane constructed by the Ansaldo Co. and called by them the Ansaldo 115, has been demonstrated to the Italian Government by M. Dorêt, the French Dewoitine test pilot.

During this demonstration the machine climbed to 6,000 m. (19,700 feet) in 17 mins. 45 secs., and created an excellent impression by its manœuvrability and general flying qualities.

The machine has now gone to Montecelio for official test.

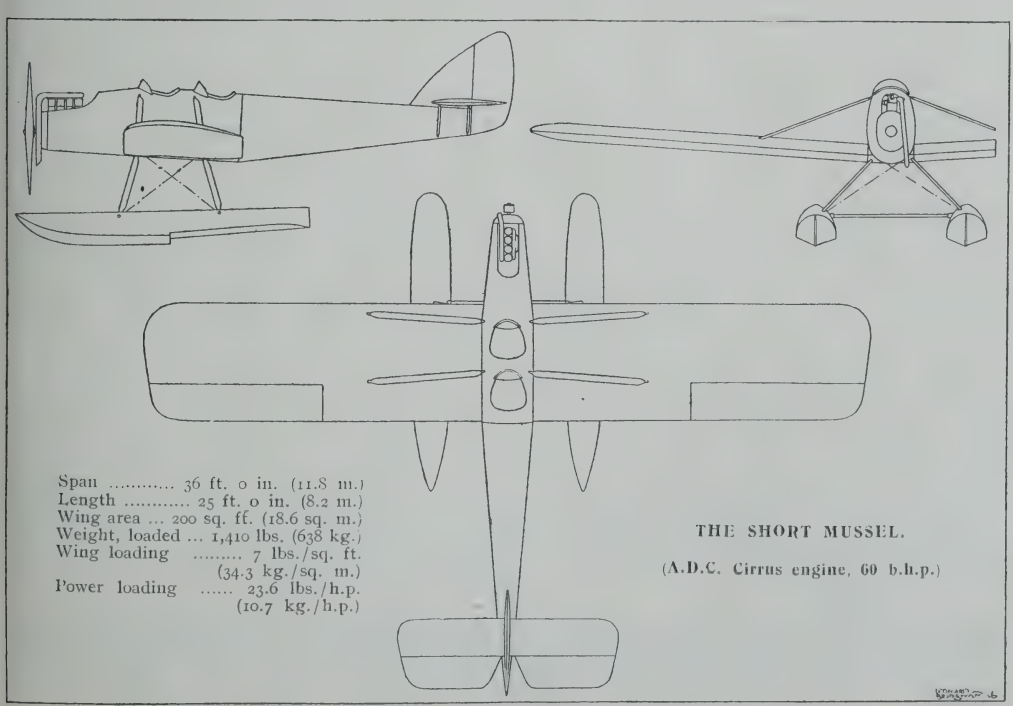
A FOOLISH STUNT.

On Feb. 24, a French Reserve military aviator, Lieut. Collot, met his death while attempting to perform a silly trick. For a bet, and in collaboration with a cinema company, he attempted to fly underneath the bottom platform of the Eiffel Tower. After having succeeded, and in getting clear of the structure, his left wing-tip struck a cable of the wireless gear connected with the Eiffel Tower, and the machine, crashing from a height of 60 feet, caught fire. The pilot was burnt to death.

Such exhibitions of foolhardiness, particularly by serving officers on Government equipment, are criminal. And if, in spite of stringent regulations that exist in France, there are still individuals who defy the regulations, then Lieut. Collot has performed a useful act, by setting an example that few would care to emulate.

The cinema company are as much at fault as the unfortunate victim, for, had he succeeded, the accomplishment would have been broadcast, much to the detriment of the French *Aviation Militaire*.

It is satisfactory to learn that all who were concerned in the organisation of the flight will be prosecuted.—L. B.



Span 36 ft. 0 in. (11.8 m.)
Length 25 ft. 0 in. (8.2 m.)
Wing area ... 200 sq. ft. (18.6 sq. m.)
Weight, loaded ... 1,410 lbs. (638 kg.)
Wing loading 7 lbs./sq. ft. (34.3 kg./sq. m.)
Power loading 23.6 lbs./h.p. (10.7 kg./h.p.)

THE SHORT MUSSEL.

(A.D.C. Cirrus engine, 60 h.h.p.)

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 11; Wednesday, 11; Thursday, 10; Friday, 16; Saturday, 14; Sunday, 2.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 47, passengers 143, freight 10 tons.

AIR UNION:

Paris—London: Machines 19, passengers 46, freight 12½ tons

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 9, freight 1½ tons.

Total number of trips by British Machines, 47, carrying 143 passengers. Foreign Machines, 29, carrying 55 passengers.

Comparative Figures:

Week ending Mar. 7:

Machines, 76; Passengers, 198; Crews, 93; Total personnel, 291.

Corresponding week, 1925:

Machines, 69; Passengers, 137; Crews, 81; Total personnel, 218.

Corresponding week, 1924:

Machines, 88; Passengers, 123; Crews, 140; Total personnel, 263.

Corresponding week, 1923:

Machines, 61; Passengers, 197; Crews, 116; Total personnel, 313.

Corresponding week, 1922:

Machines, 44; Passengers, 110; Crews, 74; Total personnel, 184.

Corresponding week, 1921:

Machines, 31; Passengers, 69; Crews, 35; Total personnel, 104.

Croydon Notes.

The great feat of the week has been the completion of the 25,000-mile test of the Bristol Jupiter in the "Blood Orange." Reference to this is made elsewhere. Now Imperial Airways Ltd. have at their disposal a thoroughly reliable radial air-cooled engine of adequate power, and so the success of the new Bristol-driven machines is assured.

One is told that the first tests of the Argosy will be made in the next few days by Mr. Barnard. It is rumoured at Croydon that the original plan for building these machines entirely of steel has not been adhered to.

The Croydon publicists have been having a regular joy week of "speed records" and the errors that have been issued to the daily press are amazing.

The first record was by the Hampstead, on Tuesday, when she flew to Paris in 1 hr. 55 mins. This is claimed to be a "record for a machine of this size and power." It is not a record for a machine of this size for the original W.8, in December, 1919, flew to Paris on its maiden voyage in 1 hr. 50 mins., piloted by the late Mr. Bager.

But it may be a record for the power-plant, as the original W.8 had *two* 450 h.p. Napiers, whereas the Hampstead has *three* 385 h.p. Jaguars.

On Saturday the Hampstead created another record, when Mr. MacIntosh flew her to Paris in 1 hr. 38 mins. After claiming this for a record of such a machine the Croydon publicists go on to point out that a "Napier-D.H." holds the speed record between the two capitals. But most people will recollect that a Martinsyde (Rolls-Royce) did the journey in 1 hr. 15 mins., and a D.H.4a (Rolls-Royce) in 1 hr. 20 mins.

When will Imperial Airways Ltd. see to it that accurate information is circulated to the papers?

We are all going down to Croydon again this Friday to meet Mr. Cobham—with some chance of success except that we may be too late.—G. D.

BRUSSELS-KINSHASA-BRUSSELS.

The Belgian Cabinet has agreed to provide a sum of 100,000 francs (about £950) towards the expenses of a flight from Brussels to the Belgian Congo and back.

The flight will be undertaken by Lieuts. Medaets and Verhaegen, of the Belgian Army, on a French machine, and the route will be from Brussels via Belgrade, Athens, Heliopolis, Atbara, Mongalla, Lisala, to Kinshasa, and return by the same route.

The flight will begin during the first fortnight of March.

THE AIR LEAGUE.

The Air League of the British Empire announce that an Extraordinary General Meeting will be held at the offices of the League, 26, George Street, Hanover Square, W.1, on Mar. 22, at 5 p.m., for the purpose of considering an Extraordinary Resolution. The Resolution consists of the alteration of certain Articles of Association.

A further Extraordinary General Meeting of the members of the League will be held on Apr. 13, at the same time and place, for the purpose of receiving a report of the proceedings of the first meeting.

A JUNKERS TRANS-MEDITERRANEAN FLIGHT.

A Junkers F.13 seaplane, fitted with a Junkers L.2 engine has recently flown from Athens to Cairo, a distance of 80 miles across the Mediterranean, in 10 hours.

RUSSIAN AIR TRAFFIC.

During the first three months of 1926, the Russian Air Transport Co., "Dobroljot," completed, on their regular air routes in Central Asia, 181 flights with 94 per cent regularity, in spite of unfavourable weather conditions. 49 passengers and 9¾ tons of freight were carried. These results are equal to those for the whole of 1924. This company uses Junkers aircraft.

The same company has recently signed a contract with the State Trading Company to open up a service between Krasnojarsk—Tcherkansk and Budinka, in Northern Siberia. The service will be operated mainly for the transport of furs which have hitherto been carried by river transport for a distance of over 800 miles on the river Jenissei, a journey taking three weeks. This route will also serve as an experiment for the ultimate organisation of regular air transport to Kamtschatka.

DANCEWORTHINESS.

A large number of people attended a dance given by the Airworthiness Department of the R.A.E., Farnborough, on Friday. One noticed that almost all the big people of the Aircraft Industry were present and the whole show went with a swing. It was very much like those joyful evenings we spend after the day's work at Lympne during the competitions.

Mr. and Mrs. Goodman-Crouch presided, and shed their radiance over the gathering, and one can safely say that the dance was another proof that the great efficiency of the Airworthiness Department is due to the proper understanding of the basic facts of organisation. That is why the Airworthiness Department is almost the only technical department of the Air Ministry with which no one has any quarrel.

One must add that one usually feels quite ready to drag oneself away from most dances at midnight, but one left this one reluctantly at 03.00 hrs.—G. D.

RECEIVERSHIPS (APPOINTMENT OR RELEASE).

NORTHERN AIR LINES LTD. (in Voluntary Liquidation).—E. Brigg of "The Riddles," Hatfield, was appointed Receiver on Feb. 22, 192 under powers contained in debenture dated Sept. 4, 1925.

MORTGAGES AND CHARGES.

CENTRAL AIRCRAFT CO. LTD.—Particulars filed of £7,000 debenture authorised Dec. 18, 1925, charged on the Co.'s undertaking and property, including uncalled capital (subject to mortgage to Midland Bank Ltd), the amount of the present issue being £6,000

PERSONAL NOTICES.

DEATHS.

ALMS.—On Mar. 1, at Risalpur, India, as the result of a bombing accident, Edward Langley Wilson Hill Alms, Flg. Off., No. 5 (Army Co-operation) Sqdn., R.A.F., second son of Mr. and Mrs. Edward T. Alms, Windsor Lodge, Taunton, aged 26.

Mr. Alms joined the R.A.F. in December, 1922, and after a course of flying instruction at No. 2 F.T.S., Netheravon, was posted to the School of Army Co-operation, R.A.F. in December, 1923. In June of 1924 he went to No. 13 (A.C.) Sqdn., and in November of the same year he was posted to No. 5 (A.C.) Sqdn., Risalpur.

BARRON.—On Mar. 5, at Karachi, India, as the result of a flying accident, L-AC. Andrew Barron, R.A.F.

CAILLARD.—On Mar. 5, at Karachi, India, as the result of a flying accident, Camille Percy Maurice Benjamin Caillard, Flg. Off., R.A.F.

Mr. Caillard served with distinction in the R.F.C. during the War 1914-18 and in April, 1920, was posted to No. 4 Sqdn., S. Farnborough. In 1922 he joined the R.A.F. Depot at Uxbridge and in September, 1923 he went to Henlow for the Engine Course at the I.A.A.D. In August 1925, he was posted to the School of T.T. (Boys), Halton, and in the following November he went to the Aircraft Depot at Karachi.

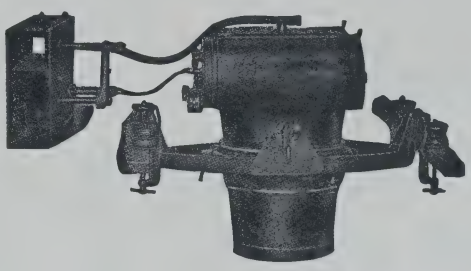
GRIMSHAW.—On Feb. 28, Herbert C. W. Grimshaw, Judge of Supreme Court, Cyprus, son of the late T. W. Grimshaw, C.B., formerly Registrar-General for Ireland, and of Mrs. Grimshaw, of The Grange, Great Sampford, Essex.

[Many people concerned with aircraft will remember Herbert Grimshaw as being in charge of labour arrangements at Sage's of Peterborough when that firm was making aircraft during the War. He was educated at Strangways and Trinity College, Dublin, and was a captain in the Royal Dublin Fusiliers Militia. After qualifying as a barrister he joined the Gold Coast Service, where he did notable work

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rising to be a Provincial Commissioner. Early in the War 1914-18 he came home owing to trouble with one of his feet, which resulted, after a period of treatment under the official doctors, in his having the whole leg amputated.

When he was sufficiently recovered, rather than be idle, and as he could not return to the Coast, he found work with Sage's as a motor driver. His outstanding ability soon resulted in his being put in charge of the engagement and control of the personnel of the factory, where he became immensely popular. His high sense of justice unfortunately brought him in conflict with minor Government officials, and for the firm's sake, knowing the ways of Government departments, he resigned—much to the regret of all the employees.

Not long afterwards he was appointed to be a puisne judge in Cyprus, and there he continued to do good work in the King's Service, despite his physical disabilities.

Herbert Grimshaw was as fine a specimen as one could meet of the type of man who has made the British Empire. Quiet, unassuming, honest in big and little things alike, kindly to those below him, ever ready to maintain against those above him his opinion of what was right and proper, he won the esteem and affection of all who knew him. By his death the King has lost a valuable servant and some of us have lost a friend whose place can never be filled.—C. G. G.]

LYONS.—The following appreciation of the late Wing Cdr. Lyons, who died at Ickenham on Feb. 1, has been written by one who knew him:—

The R.A.F. has recently suffered a great loss by the sudden death of Wing Cdr. "Tommy" Lyons, O.B.E., Knight of the Legion of Honour and also the Order of St. Anne of Russia.

Wing Cdr. Lyons had the distinction of having been concerned in every department of Headquarters, from the early days of the Military Aeronautics Directorate. On the formation of the Air Ministry he was S.O.1 in charge of an important branch and was also sole resident officer.

What he had done during those years was known mostly to himself only. His juniors knew there was "something doing." His seniors only knew that it was done.

In 1920 he was appointed to Command No. 4 Stores Depot, Ickenham, the site of which he chose in 1916. Here he endeared himself to all with whom he worked.

He was posted to Iraq in 1921 where after doing further constructive staff work he was invalided home. After a long spell of sickness followed by a short spell of staff work at Spittlegate he was re-posted to his old depot (No. 4) in the autumn of 1923.

His system was control and not interference. He placed the greatest reliance on the integrity of those serving under him and satisfied himself by results and occasional surprise checks.

He had been heard to remark that his depot did not require "commanding."

Many times when owing to pressure of office work he had not been able to tour his depot, he stood at the gates on the cessation of work at midday or evening (often in heavy rain) with a cheery smile and recognition for all. It was *his* depot and they were *his* men, and how proud he was of them and they of him.

He was taken seriously ill on Jan. 28, and passed away twenty minutes after the depot had begun work on Feb. 1. He was buried with full R.A.F. honours in Ickenham Churchyard, and, in accordance with his wish, within sight of his depot.

No greater visible tribute could have been paid to such a leader than at that sad farewell. Behind the Service personnel followed in formation of fours the entire staff of the depot—some hundreds of civilians—to the Church and graveside. The depot was closed for one hour.

"Tommy" Lyons has gone, but his memory lives and so long as his example is emulated, the R.A.F. should be proud that Providence singled out the R.A.F. to be chosen to receive such a man to set such an example of loyalty and ability.

FORTHCOMING MARRIAGE.

WARNE-BROWNE—NICHOLSON.—The engagement is announced between Flt. Lt. Thomas Arthur Warne-Browne, D.S.C., R.A.F., only son of Mr. and Mrs. Arthur Warne-Browne, of Shiplake, and Ruth, younger daughter of Mr. and Mrs. Charles E. Nicholson, of Lee-on-Solent.

BIRTHS.

LEGG.—On Mar. 3, at 22, Portland Square, Plymouth, to Honor (*née* Square) and Robin Legg, K.O.S.B., att. R.A.F.—a son.

ROBINSON.—On Feb. 15, at Chaucer's Drive, Lincoln, the wife of Flg. Off. Denniss Robinson, R.A.F.—a daughter.

ALLEN.—On Jan. 29, at Risalpur, India, to Flt. Lt. C. E. H. and Mrs. Allen (*née* Burke)—a son.

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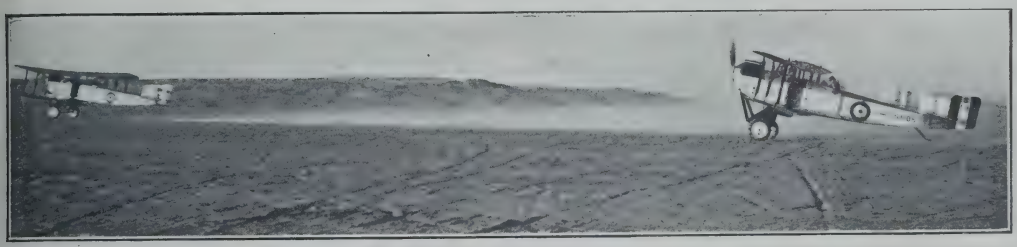
Edited by C. Grey

Vol. XXX. No. 11. SIXPENCE WEEKLY. Registered at the G.P.O. as a Newspaper.

APR 9 1926

"AFTER US COMETH A MULTITUDE—
"PROSPER THE WORK OF OUR HANDS."

(Kipling, "The Settler.")



THE START FOR THE CAPE:—The "Cape Flight," R.A.F., leader Wing-Commander C. W. H. Pulford, C.B.E., A.F.C., leaving Heliopolis, on March 1, on Fairey III.D's. (Napier Engines).

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MAR. 17, 1926.

THE AEROPLANE

Incorporating

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VOL. XXX. No. 11.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months, 32s. Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, $8.
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ON MR. COBHAM.

Undoubtedly the man of the moment in aviation is Mr. lan J. Cobham. His spectacular arrival at Croydon on aturday last, March 13, and his subsequent reception by His ajesty the King seem to register a kind of high watermark the flying career of one of the most remarkable person- ities that British aviation has produced. One refers ad- sedly to his flying career because one feels that Mr. Cob- am's abilities will, with any luck, reach their ultimate de- elopment in much wider activities than that of a mere pilot. is mental make-up is such that he would have been bound achieve success in any walk of life.

One of Mr. Cobham's best friends described him some time go as the ideal commercial aviator. The epithet is well- eserved. Commercial aviation is the be-all and end-all of r. Cobham's public life. He is the most thoroughly com- ercially-minded person one has met in connection with ying. And one says this in a purely complimentary sense. hatever Mr. Cobham does is done with an eye to the de- elopment of commercial flying.

So far as he himself is concerned he is not at all commer- ally-minded, though happily his devotion to his work has any rate provided him with a decent living, and one hopes will ultimately make him the handsome fortune which he well deserves. He is much too far-sighted to be "on the ake" himself. His thoughts run entirely towards the nancial success of flying as such.

A keen observer remarked the night Mr. Cobham arrived, fter hearing him talk on the wireless, that Mr. Cobham is Aviation what Mr. de Groot of the Piccadilly Restaurant and is to Music. The comparison is just. Each is a great opulariser.

He is not even concerned with whether an individual ight itself is a financial success, so long as that flight emonstrates the commercial possibilities of aircraft. In merica when a person lays himself out to convince others iat certain theories or propositions or schemes in which he interested are sound and worthy of support he is said to "selling" that proposition to the other people. And when the other people are convinced they are said to be "sold on" those propositions. Mr. Cobham has dedicated his existence to selling aviation to the British Public. And when the British Public are sold on aviation Mr. Cobham will perhaps be satisfied that he has justified his existence. But until then one cannot imagine him settling down to a peaceful existence.

A Deserved Loaf.

In an interview in *The Evening News* the other day Mrs. Cobham was reported as having said that her husband was like a bird who spent most of his time in the air and came down occasionally for a few crumbs. Before his arrival at Croydon on Saturday somebody was joking with her about this statement and she remarked, in the best vein of aviation humour, "And I think it is time now that he came down for a jolly good loaf." One endorses that sentiment most cordially.

In the one sense of the word, it is quite time that Mr. Cobham not only took a rest himself but gave us all a rest. For following Mr. Cobham's rapid migrations over the face of the earth, and dashing out to see him start for and arrive from foreign parts makes life more than usually hectic. So if Mr. Cobham sees fit to loaf for a bit everybody will be pleased.

And in the other sense of the word, it is quite time that, having picked up such financial crumbs as may have come to him as the result of his big flights, Mr. Cobham should be found some occupation in which he can have a good slice of the loaf of wealth.

Mr. Cobham has demonstrated beyond dispute his selling ability and his organising ability. If he had not been infected by the aviation microbe, he would have been one of the World's greatest commercial travellers, and ultimately he would have become the head of a big business house. If he had been caught young and educated for the work he would have been a wonderful Staff officer.

Presumably everybody concerned with aviation will sooner or later read his excellent book *Skyways*. In it one sees,



THE ARRIVAL.—Mr. Cobham taxying in across the chalk desert which had just greeted him with a dust-storm. Above is the Handley Page W.8b and to the left the D.H. 34 which escorted him home. A Vickers Vulcan is on the ground.

in the story of his early work as a joy-ride pilot, his ability even then to sell aviation to the Public. And later when he is telling of some of his big flights one sees how his organising ability develops. The book shows the real Alan Cobham and not the one who has been created in the minds of the populace by newspaper stunts. From it one can judge his genuine value and ability.

A well-known aeronautical newspaper on the Continent describes itself as a "*Revue de Vulgarisation de l'Aéronautique.*" It is true that the word *vulgarisation* in the French language only means popularisation. But the way in which the British daily newspapers have handled Mr. Cobham's fine flights has certainly entitled them to be called reviews for the vulgarisation of flying,—in the English sense. The average newspaper editor, like the people who run the kinema trade, and to a great extent the broadcasting business, seem convinced that in order to interest the British Public it is necessary to hand out to them dollops of what Fleet Street calls "heart interest" and what America calls "sob stuff."

Mr. Cobham has suffered considerably among the genuine aeronautical community from this form of vulgarisation. But those who have read in THE AEROPLANE the letters which he has written from time to time during his trips to Burma and back and to the Cape and back realise how very different is Alan Cobham the aviator from the Alan J. Cobham of the newspaper stunts. And it is Alan Cobham the aviator, with all his remarkable experience and ability, who can do so much to further the progress of Commercial Aviation.

THE JOURNEY TO THE CAPE.

Just why Mr. Cobham's journey to the Cape and back should have captured public imagination to such an extent is difficult to understand. It is one of those curious instances of mob psychology which cannot be explained.

The distance was not so great as his own flight to Burma and back, the distances which he covered in each individual day were not so great as those covered by Col. Vuillemin in his flight from Constantinople to France several years ago, nor as those covered by Lieut. Pelletier Doisy in his flight to the East. Owing to stoppages en route he did not cover as great a distance in any week as did the Marquis de Pinedo in his flight from Calcutta to Rome at the end of his 35,000 mile journey round Australia and Japan in a flying boat. Yet somehow the flight home from the Cape has captured the public fancy.

The real value of the journey, purely from a point of view of Commercial Aviation, is that, like the flight to Rangoon and back, it has demonstrated that air mail lines to the extremities of the British Empire are possible.

As Mr. Cobham said in his letter which appeared in THE AEROPLANE on Feb. 24, "If the flight has done nothing el it has been a great experience in making supply organisatio and an eye-opener to the fact that the whole of Africa under some sort of administration, and the air route und British, ... and that supplies can be transported to mo parts."

As Mr. Cobham said, also in that letter, the outward fligh was not a commercial air transport flight but a flight of su vey in which he was out to find the possibilities of makin commercial air transport routes throughout the Empire, an naturally in surveying the routes he had to take certain risk that did not constitute Commercial Aviation.

MR. COBHAM ON AIR ROUTES.

The soundness of Mr. Cobham's views on commercial a routes may be judged from his quoting a remark of French Air Transport Manager, who said, "In these days aviation the pilot on a commercial air route should alway be at peace with the ground beneath him." Which is merel another way of stating Col. Paul Henderson's motto, tha "the success of an air line lies on the ground."

As Mr. Cobham himself said "We cannot go on runnin commercial air routes so-called, which are liable to disaste on forced landings, in the hopes that some day, if we d enough flying, we shall get the aeroplane that never fails."

Those who have ideas on the subject of Commercial Avia tion will do particularly well to remember another of Mr Cobham's statements in that letter, namely that "We mus have commercial air transport, and must bear in mind tha an air route ceases to be a commercial air transport rout the moment there is danger in it above the normal dange attached to any other form of transport."

If only those who talk nonsense about the 100 per cen reliable motor and the infallible aeroplane, and the absolut security assured by multiple-engined machines, would tak Mr. Cobham's words to heart, and would set to work to pro duce perfect ground organisation, then we might have suc cessful Commercial Aviation.

THE TROUBLES AT THE START.

Mr. Cobham's own journey was an example of the need fo proper ground organisation. The story of his early trouble in his flight to the Cape has not been told and in the in terests of British aviation in general one believes that it ough to be told, because in fact they reflect no discredit on any body. Those who followed his progress will remember tha he was delayed for nearly three weeks at Athens and th cause of that delay has never been explained.

The facts are roughly these,—

It is the custom in all British aero-engines to use, instea of undiluted petrol, a mixture of petrol and benzol which con tains about 20 per cent. benzol. Petrol derived from differen

MR. COBHAM'S SMALLEST CROWD.—The arrival at Croydon photographed from the air. The sheds on the right are the workshops of Imperial Airways Ltd. Mr. Cobham's machine is in the foreground, with a D.H. Moth behind, facing the railings of the Public Enclosure.

Major Franco's Choice!

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MORNING POST, 12.2.26

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MID-WAY.—Shilluk Warriors doing a War-Dance in front of the D.H.50 at Malakal. (*Photographed by Mr. Elliott.*)

sources has different qualities. One does not profess to be a chemist, but one gathers that petrol which is rich in what are called aromatics will permit an engine to run smoothly, free from detonation, which causes the noise commonly known as "pinking," whereas petrol which is not rich in aromatics detonates after the manner of dynamite instead of burning like cordite. The higher the compression of the engine the greater is the tendency to detonate.

In America apparently they use pure petrol, and judging by one's own sense of smell the "gasoline" which they use is entirely free from aromatics. In fact it is the foulest stuff, whether in liquid form or when burnt, that one has ever smelt. The result is that American aero-engines as a rule have a lower compression than have British engines, and apparently do not detonate even the worst of petrol.

For his flight to the Cape Mr. Cobham chose B.P. petrol, which is the product of the Anglo-Persian Oil Company, probably influenced by the fact that on an Imperial journey he ought to use Imperial fuel.

Before starting for the Cape he tried B.P. petrol in a Jaguar engine and found that it detonated. Consequently different pistons, giving lower compression, were fitted.

With these low compression pistons and a larger proportion of benzol than is usual in most aero-engine mixtures, the engine ran all right, as one noticed during Mr. Cobham's preliminary demonstration at Stag Lane.

On the first stretch of the journey Mr. Cobham landed at Lyon to fill up his tanks, and found that there was plenty of B.P. spirit but no benzol. However he pushed on, and reached Athens safely. Just what symptoms developed on the way one does not know, but on arriving at Athens, where benzol was available, the engine had to be taken to pieces and some new pistons had to be fitted.

The rest of the journey to the Cape was delayed by the necessity for waiting for supplies of benzol to be sent up country to the various aerodromes in Africa. In his letter published on Feb. 24 Mr. Cobham refers to the "re-organisation of the benzol supplies from Cairo to the rest of the route." Consequently he had to creep up behind his benzol supplies practically all the way to the Cape, although apparently the original intention was to do the flight on petrol without benzol.

The Petrol-Benzol Question.

This unfortunate occurrence cannot be taken as reflecting in any way either on the Jaguar engine or on B.P. petrol. It was merely unfortunate that the two did not agree with one another. And one might argue for ever without coming to any conclusion as to whether the petrol broke the engine or the engine detonated the petrol.

As a matter of fact the delays should be a valuable lesson to those who are responsible for the supplies of fuel to the R.A.F. in time of war. It is obviously desirable that our fuel supplies should be all-British in case of war. The U.S. Flying Services will probably need all the petrol which North America produces and there is a probability that no supplies will be available from the Dutch East Indies until the Dutch Oil Islands have been recaptured from Japan. Therefore, as one has pointed out many times in this paper as our chief reason for holding Iraq and Palestine, we shall have to depend on the Anglo-Persian Company for our entire supply of fuel.

There is a good deal to be said for the argument that if we produce our own benzol, made from coal, in England, we shall only need to transport to England half the amount of petrol, if we use 50 per cent. benzol in our aero-engines. On the other hand it is also true that we shall have to transport from England all the benzol which we shall need for our aircraft serving overseas.

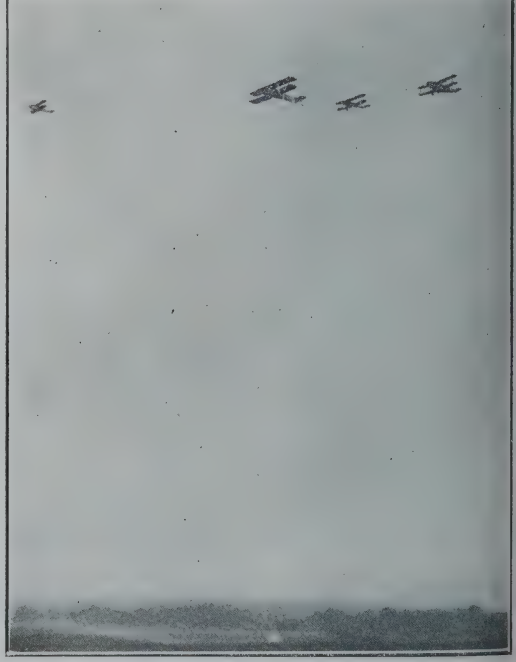
However the experience, albeit rather dearly bought, proved useful. And Mr. Cobham's homeward journey, with adequate supplies of benzol on the way, was without untoward incident. But one does think that, purely as a matter of policy, it would have been better if those responsible for the organisation of the flight had made public the causes of the engine trouble at Athens, for quite a good deal of harmful rumour might have been stopped at the outset. And, as a matter of organisation, it would have been better if the technical people concerned had discovered beforehand whether a standard Jaguar engine would run on standard B.P. spirit.

Mr. Cobham's Arrival.

The story of Mr. Cobham's journey has been recorded stage by stage in this paper and the details have been reported with more or less accuracy in the daily Press. There remains therefore only the need to describe his arrival at Croydon.

Knowing that there would be something of a crowd, one went down to the aerodrome in good time so as to get a pass admitting one to the aerodrome itself. Seeking a Civil Air Traffic official of sufficiently high rank to issue the necessary pass one met a large policeman coming out of the said official's office and asked whether one might enter. The reply was illuminating as showing the mental attitude of one whose duty it is to attend to the regular running of the air line organisation. The policeman remarked "He is busy on the telephone at the moment. But it's nothing important. He's only talking about Mr. Cobham's arrival." Which after all was a strictly correct official view. Mr. Cobham's affairs had nothing to do with the lawful occasions of the London Terminal Aerodrome.

Having in due course penetrated to the aerodrome one



IN SIGHT OF HOME.—Mr. Cobham's D.H.50, with a Handley Page W.8b on its starboard bow and a D.H.34 on its port quarter coming in over Croydon Aerodrome, with the Surrey D.H.9 in the distance.


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found most of the notabilities and many of the Modocks of aviation gathered together discussing the event. One of the most amusing stories which was going round was to the effect that our excellent Under-Secretary of State for Air, Sir Philip Sassoon, wishing to give Mr. Cobham an official welcome on his arrival, had sent a message to say that owing to official engagements he himself might be a little late in getting to the aerodrome, so, if Mr. Cobham got there first, would the Civil Aviation Authorities keep him up in the air until the Under-Secretary of State arrived?

Mr. Cobham's aeroplane not being fitted with wireless and Mr. Cobham himself not being fitted with telepathic apparatus the message might have been a trifle difficult to convey. Possibly a red Verey light might have been fired at him. But one hardly imagines that an aviator arriving at the end of a flight of something over 800 miles and seeing a perfectly clear aerodrome in front of him would pay much attention to official fireworks. In fact he would probably regard it as some sort of pyrotechnic greeting. However Sir Philip's Rolls-Royce arrived before Mr. Cobham's de Havilland and this interesting little study in psychology was not pursued to its conclusion.

The Escort.

As soon as Mr. Cobham was signalled as having crossed the coast at Lympne a whole fleet of aircraft went out to meet him. First of all went six little Moths. Three belong to the De Havilland School and were piloted by Captain de Havilland himself, Mr. White and Mr. Reeves, two of the de Havilland instructors. One belongs to the London Aeroplane Club and was piloted by Mr. Sparks, the Club instructor. And two were privately owned machines, belonging to Mr. Kittel and Mr. Munday, who had in a very sporting spirit lent their machines in their own absence to be piloted by Major Cochran-Patrick and Mr. Broad, the latter carrying Mrs. Alan Cobham as passenger to greet her husband in the air, as arranged by the daily Press to impart heart interest to the proceedings.

Major Brackley, Air Superintendent of Imperial Airways, piloted a W.8b and took with him as passengers sundry old-timers of the R.A.F. including Sir Quentin Brand, one of the most notable South African pilots of the War, and the first (with Col. van Ryneveld) to fly to the Cape.

Mr. Olley took up another W.8b full of passengers who were apparently willing to pay four guineas a head for the fun of saying that they helped to escort Mr. Cobham to Croydon. And Mr. Youell took up a similar lot of passengers in a D.H.34. How many of these various passengers were genuinely interested in the proceedings and how many were mere Modocks out after reflected glory one can form no estimate.

Lieut.-Col. G. L. P. Henderson took up the Surrey Flying Services' D.H.9 with a photographer, and judging by published pictures showed all his old wartime skill in getting the right position from which to shoot.

While the machines were away somebody suggested that Mr. Lawford should, as soon as Mr. Cobham appeared, drop a bag of sand from the control tower of the Aerodrome, which should be blown by the slipstream of an airscrew out onto the aerodrome to give Mr. Cobham that homey feeling which he would need after his battle with a sandstorm in Africa—in lieu of the clouds of the Alps and the eagles of the Pyrenees. (*Vide* daily Press accounts of previous voyages.)

While we awaited Mr. Cobham, Mr. Perry of the A.D.C. came out on the Martinsyde with a Jaguar engine and did some very pretty trick flying. And while he was at it R.A.F. scout formation came over, which gave Mr. Perry opportunity of demonstrating how much faster his Martinsyde is than the R.A.F. most modern speed-machir

Happily just as Mr. Cobham hove in sight a Fre Goliath happened to be turning round on the vast expa of naked chalk which now spreads its arid area in front the Custom House. The two engines of the Goliath kic up quite an imposing white cloud, which may or may have suggested to the oncoming Mr. Cobham a combinat of his African sandstorm and the white cliffs of old Engla

Home Again.

When the fleet appeared it was seen that Mr. Cobham leading, with a W.8 on one side and a D.H.34 on the ot and another W.8 behind him, the Surrey Services mach lying out on one flank for photographic purposes. But Moths were nowhere in sight.

As it crossed the boundaries of the aerodrome, the for tion broke up to give Mr. Cobham a clear landing. dived close to the ground and then did a beautiful climb turn, just to show that he still had complete mastery of machine after his eight-hundred-mile journey. And t after another circuit of the aerodrome he made a quite p fect landing.

It is probable that the crowd at Croydon was the smal crowd that Mr. Cobham had met, at any rate at any import town, in the course of his journey. But even so it wa bit more than the limited control of the aerodrome co tackle. A supplementary enclosure had been fenced off the South of the Custom House, and of course the people that enclosure merely pushed down the fence and rus out into the aerodrome.

Fortunately Mr. Cobham is accustomed to dealing w crowds, so he merely taxied up to the nearest possible s spot and then stopped his engine, instead of hewing way through the crowd with his airscrew as he would h been quite justified in doing.

When he emerged from the cockpit he was looking a t tired but otherwise extremely fit and well. Mr. Elliott Mr. Emmott also looked quite fit and one was glad to that the former did not show any signs of suffering from malaria which he contracted in Rhodesia.

One gathers that Mr. Emmott had had the foresight, h ing reached civilisation, to send his photographs and thi home by train, so as to assure their arrival.

A Disappointment.

While Mr. Cobham was being carried shoulder high to Custom House, the six little Moths, which had by sheer luck missed Mr. Cobham's machine in the air, landed aln unnoticed. So Mrs. Cobham was unable to greet husband till most of the fuss was over. And thus, also, picture papers were prevented from securing photographs the marital greetings which would have imparted so m more valuable heart interest to their momentary incurs into aviation.

Of course really the picture papers have very little imagi tion. What they ought to have done was to have arran with Mrs. Cobham to take the Cobham son and heir, a six months, up with her in some sort of aeroplane, " hover "—which is what the daily Press would have ca it—over the aerodrome till Alan J. arrived. Then Cobh Junior could have been dropped overboard in a parachute mamma to greet daddy on the ground. That *would* h been a stunt worthy of our great newspapers.



ARRIVED.—Mr. Cobham appearing from the cockpit of the D.H.50.

"Mr. Cobham and his machine have come victoriously out of a wonderful feat of endurance, which proves—if proof were needed—that the British aeroplane and the British airman are as good as any in the world."

Leader, "MORNING POST," March 15.



Photo by courtesy of the "Daily Mail."

The First Aeroplane to Fly

from LONDON to CAPE TOWN

AND RETURN—

The D.H. Type 50J

385 H.P. SIDDELEY "JAGUAR" ENGINE

17,000 MILES——————170 HOURS

The same aeroplane and engine were used throughout the flight.
The homeward journey was made in less than 16 days.
80 flying hours at 105 miles per hour.

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A Royal Greeting.

Subsequently, as recorded in all the news-sheets of the World, Mr. Cobham was commanded to Buckingham Palace where he was granted an interview with His Majesty the King. And His Majesty, on learning that Mrs. Cobham was waiting in the car outside the Palace, promptly sent for her and congratulated her on his husband's fine performance.

Thereafter Mr. Cobham in spite of the fatigues of his journey delivered a little broadcast talk, which was among the few interesting things which the British Broadcasting Company have done within living memory.

Mr. Elliott's Success.

Judging by the way Mr. Cobham's engine was running when he came into the aerodrome and from the way it opened up when called upon for a climbing turn, it seems to have survived its internal troubles very well indeed. And it certainly is immensely to the credit of Mr. A. B. Elliott that throughout such varying conditions of weather and temperature he should have kept the engine in such excellent running order

The Material.

An examination of the de Havilland 50 after it landed gave one no idea that it had ever been on a journey at all. It was a monument to de Havilland workmanship and design.

Its Titanine dope looked as if was just starting instead of having come back. Certainly the Titanine people do seem to have discovered the secret of indestructibility.

The plywood panelling of the fuselage showed no sign of any movement anywhere, thus proving not only that the plywood itself had stood up to extremes of heat and cold and dryness and moisture, but that the timber in the structure of the fuselage was standing up equally well.

There is interest in noting that the whole fuselage, barring the alteration in the engine mounting, is exactly the same as when Mr. Cobham flew it to Rangoon and back with Sir Sefton Brancker. Thus the woodwork has been through the heat of India and Burma as well as twice through the tropics of Africa. It has also stood the cold above the snow-line of the Himalayas and Alps.

Therefore there need be little doubt about the durability of wooden structures as compared with metal, whereas there is some doubt about what some metals will stand under varying temperature conditions. The difficulty about timber for aircraft is the difficulty of securing adequate supplies in time of war and the way in which that plywood has stood up seems to indicate that if supplies of solid timber fail we can rely upon built-up wooden structures. The Aeronautical & Panel Plywood Company Ltd., who are associated with the famous timber firm of Mallinsons, certainly deserve to be congratulated on their products.

Our old friends the Palmer Tyre Ltd. also deserve congratulations on the way in which the tyres have survived heat and cold and exposure. One tyre was punctured through running over a broken bottle somewhere in South Africa, but otherwise no trouble was experienced either with covers or tubes or the wheels themselves, which are also Palmer products.

Naturally K.L.G. plugs were used. They always are in all these big events, besides being used throughout the R.A.F. and our Civil Aviation. They were adequately supplied with highly efficient sparks by British Thomson-Houston Magnetos, which, one gathers, behaved impeccably throughout.

Equally naturally Smith's navigating instruments and indicating instruments were used in the machine. The firm is worthily reaping the benefit of the enterprise which years ago led the Directors to specialise on aeronautical instruments.

Of the rest of the structure of the machine apart from timbet one may say that the tubing was naturally supplied by Accles & Pollock. They had the enterprise to specialise on aircraft tubing in 1909 when Lieut. Seddon, R.N., started to build the first all-metal aeroplane, and they have had practically a monopoly of such material ever since. Bruntons of Musselburgh, another pioneer firm of aircraft material, supplied all the cables and streamline wires used in rigging.

Quite a large proportion of the credit for success belongs to Sir Charles Wakefield's firm who besides supplying Castrol oil were very largely responsible for the distribution of supplies, and one gathers contributed handsomely in hard cash towards the finances of the expedition.

Further financial aid to Mr. Cobham's adventure was supplied by Imperial Airways Ltd. to whom he has to report as to the possibilities of a Cape to Cairo air route. One hopes that as the result of his air survey we shall not have to wait many years before an Imperial air line is actually running to the Cape.

The possibility of an air line to the Cape has now been demonstrated. Mr. Cobham's speed throughout was about 100 miles an hour. In fact he covered the 8,000 miles in roughly eighty flying hours. With proper ground organisation and relays of machines and pilots it ought to be possible to convey letters a thousand miles a day. So making allowance for bad weather the proper air mail time between London and Cape Town ought, given adequate enterprise, to be brought down to eight or ten days, as against eighteen days by the steamer route.

In his various reports Mr. Cobham has referred to the valuable assistance he has received from the Royal Air Force, the South African Air Force, and the various Government and Civil Authorities with whom he has come into contact on the way. Apart from their obligation to help him, as a matter of duty, one knows that all the flying people have helped him in a true spirit of sportsmanship in an endeavour to help what despite the honestly commercial basis on which it was organised, has been one of the finest sporting efforts in the history of aviation. And it is as a sportsman even more than as our leading commercial aviator that one congratulates Mr. Cobham on his success and wishes him still greater success in more important areas of operation in the future.—C. G. G.

THE TIME TABLE.

The following are the dates of Mr. Cobham's various stages :—

Outward Journey.

November.—16—London—Paris, 17—Paris—Marseilles, 18—Marseilles—Pisa, 19—Pisa—Brindisi, 20—Brindisi—Athens 1,765 miles. (Here there was a delay of 16 days, caused by replacing damaged pistons in the engine.)

December.—6—Athens—Sollum, 7—Sollum—Cairo. (Here there was a delay of 9 days, while arrangements were made for benzol supplies to be sent up country.)

16—Cairo—Luxor, 18—Luxor—Aswan, 20—Aswan—Wadi Halfa, 22—Wadi Halfa—Khartoum. (Here there was a further delay of 6 days while benzol supplies were arranged.

28—Khartoum—Malakal. 4,185 miles.

January.—1—Malakal—Mongalla. (Here another wait of 10 days was necessary while benzol was reaching the aerodromes ahead.)

11—Mongalla—Jinja, 13—Jinja—Kisumu, 18—Kisumu—Tabora, 19—Tabora—Abercorn, 20—Abercorn—N'Dola, 23—N'Dola—Broken Hill, 29—Broken Hill—Livingstone, 31—Livingstone—Bulawayo. 6,670 miles.

February.—2—Bulawayo—Palapye Road—Pretoria, 5—Pretoria—Johannesburg. (Here a delay of 10 days occurred because Mr. Elliott was taken ill with malaria.)

15—Johannesburg—Kimberley, 17—Kimberley—Beaufort West—Cape Town. 8,020 miles.

Return Journey.

February.—26—Cape Town—Beaufort West—Kimberley (32 miles).

27—Kimberley—Palapye Road—Bulawayo (830 miles).

28—Bulawayo—Broken Hill—N'Dola (210 miles).

March.—2—N'Dola—Abercorn (345 miles).

3—Abercorn—Tabora—Kisumu (400 miles).

4—Kisumu—Mongalla—Malakal (815 miles).

5—Malakal—Khartoum (330 miles).

6—Khartoum—Bara—Wadi Halfa—Aswan (480 miles).

7—Aswan—Cairo (480 miles).

9—Cairo—Sollum (390 miles).

11—Sollum—Athens (450 miles).

12—Athens—Brindisi—Pisa (830 miles).

13—Pisa—Lyon—London (925 miles).

Total outward and return journey—16,130 miles. The flying time for the 8,000 and odd miles of the homeward trip was 80 hours.

MR. COBHAM'S NEXT VENTURE.

It is understood that in June next Mr. Cobham will attempt a spectacular high-speed flight to Australia and back on the same D.H.50J. At Calcutta the machine will be fitted with floats, and the journey to Sydney, and back to Calcutta, will be made with the machine turned into a seaplane.

MR. COBHAM'S MACHINE ON VIEW.

Mr. Cobham's machine is on view during the present week at Selfridge's. Mr. Gordon Olley of Imperial Airways is in charge of the machine and will answer all questions both silly and otherwise.

One of the most noticeable points is the way the plywood supplied by the Aeronautical and Panel Plywood Co. Ltd. has stood up to the variations of climate. It has been in position now for three years and went on the Rangoon flight as well as to Cape Town. In spite of the extremes of temperature it has shown no signs of coming unput.

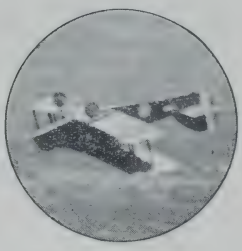
MR. COBHAM AT THE R.Ae.S.

Mr. Alan J. Cobham will as arranged duly lecture before the Royal Aeronautical Society on Thursday at 6.30 p.m. at the Royal Society of Arts.



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THE ROYAL AIR FORCE.

The London Gazette

March 9.

General Duties Branch.—Flt. Lt. E. F. Turner is granted a perm. comn. in this rank (Jan. 1).

The following Plt. Offs. are promoted to the rank of Flg. Off. :—C. W. L. Trusk, R. W. Steele (Feb. 8); A. O. Pollard, V.C., M.C., D.C.M. (Capt., T.A. Res.), E. H. Newman (Feb. 15). Plt. Off. on probation E. L. Drew is confirmed in rank (Feb. 19); Plt. Off. R. N. T. Gape takes rank and precedence as a Plt. Off. as if his appointment in that rank bore date Sept. 1, 1924. Reduction to take effect from Feb. 23.

Flg. Off. H. Ford, D.F.C., relinquishes his S.S. comn. on account of ill-health, and is granted permission to retain the rank of Flt. Lt. (Mar. 10); Plt. Off. on probation G. C. Crackanthorpe resigns his S.S. comn. (Mar. 10).

Stores Branch.—Flg. Off. C. E. Tidy is granted a perm. comn. in this rank (Mar. 10). The following Plt. Offs. on probation are confirmed in rank (Feb. 10) :—R. H. Clay, E. G. M. Charleson. Flg. Off. M. W. Keey is restored to full pay from half-pay (Mar. 8).

Accountant Branch.—Flg. Off. R. E. Steggall, M.B.E., is transferred to the Reserve, Class C (Mar. 5).

Medical Branch.—Flg. Off. G. P. O'Connell, M.B., is granted a perm. comn. in this rank (Mar. 10).

The following are granted S.S. comns. as Flg. Offs. for three years on the active list, with effect from and with seniority of Feb. 23 :—J. P. Hederman, E. J. Mockler, M.B.

Memorandum.—Sec. Lt. A. Barnett relinquishes his honorary comn. on enlistment in the Supplementary Reserve, Army (Feb. 17).

Reserve of Air Force Officers.—Flg. Off. K. C. Whitwell is transferred from Class A to Class B (Mar. 9). The following are transferred from Class A to Class C :—Flt. Lt. C. F. Briggs (Mar. 6); Flg. Off. R. V. D. White (Mar. 4). Flg. Off. C. H. Boreham is transferred from Class B to Class C (Dec. 17, 1923); Flt. Lt. P. Worthington, M.C., relinquishes his comn. on completion of service (Feb. 1); Plt. Off. A. Lewis resigns his comn. (Mar. 9).

Appointments.

Week ending Mar. 15.

General Duties Branch.—Wing Commanders D. Harries, A.F.C., to R.A.F. Depot, Egypt, for administrative duties, 10/2. J. O. Archer, C.B.E., to No. 3 Wing H.Q., India, to command, 26/1.

Squadron Leaders G. W. Murlis-Green, D.S.O., M.C., to H.Q., India, 5/3. A. W. Mylne, to No. 28 Sqdn., India, 15/2. J. S. T. Bradley, O.B.E., to H.Q., Air Defences of Great Britain, 1/3. V. S. Brown, to R.A.F. Depot on transfer to Home Estab., 22/2. R. S. Booth A.F.C., to No. 5 F.T.S., Sealand, 15/3.

Flight Lieutenants A. M. Blake, A.F.C., to Superintendent of Reserve, Northolt, 15/3. W. R. Cox, M.C., A.F.C., R. W. Edwards, T. A. Langford-Sainsbury, D.F.C., A.F.C., and A. C. Bayley, to R.A.F. Depot on transfer to Home Estab., 14/2. H. V. Pendavis, D.S.O., to No. 7 Group H.Q., Andover, 17/3. J. E. MacLennan and W. J. Millen, to R.A.F. Depot on transfer to Home Estab., 14/2. R. E. G. Fulljames, M.C., to Aircraft Depot, India, 28/1. K. E. Ward, to H.Q., Iraq, 5/3. A. C. R. Harrison, M.C., to H.Q., India, 5/3. N. C. Saward, to No. 1 Sqdn., Iraq, 5/3. G. M. F. O'Brien, D.S.C., to R.A.F. Depot, Egypt, 16/2. P. Murgatroyd, to H.Q., Mediterranean, 13/2. G. Archer, to No. 7 Sqdn., Bircham Newton, 18/3.

Flying Officers R. J. Willson, to No. 28 Sqdn., India, 30/1. (Hon. Flt. Lt.) F. L. Woledge, to No. 8 Sqdn., Iraq, 5/3. C. K. J. Coggle, to No. 47 Sqdn., Egypt, 5/3. R. A. Ford, to No. 84 Sqdn., Iraq, 5/3. H. M. G. Parker, to No. 30 Sqdn., Iraq, 5/3. W. E. Johns, to Record Office, Ruislip, 15/3. R. G. Mollard, to R.A.F. Depot on transfer to Home Estab., 24/2. G. M. Trundle, to No. 4 F.T.S., Egypt, 24/2. J. F. Tadman, C.G.M., to R.A.F. Depot, Egypt, 6/1. E. E. Arnold, D.F.C., to H.Q., Egypt, 24/2. F. C. T. Rowe, to No. 14 Sqdn., Palestine, 15/2. H. T. Satterford, to No. 4 Apprentices' Wing, Cranwell, 14/3.

Pilot Officers G. H. C. Keay, to No. 5 F.T.S., Sealand, 15/3. L. R. Mizen, to No. 30 Sqdn, Iraq, 5/3. F. S. Homersham, D.C.M., M.M. to No. 47 Sqdn., Egypt, 27/2. L. B. McGoverne, to Heliopolis Detail, Egypt, 27/2.

Medical Branch.—Flight Lieutenant (Dental) N. H. Medhurst, to R.A.F. Depot, Egypt, 29/1. Flying Officers M. J. Marren, M.B., and G. S. Strachan, M.B., to Research Laboratory and M.O.S. of I., Hamstead, on appointment to S.S. Comns., 1/3.

Stores Branch.—Squadron Leader F. Tedman, M.B.E., to H.Q. Cranwell, 12/3. Flight Lieutenants J. Lundon, to R.A.F. Depot, on transfer to Home Estab., 14/2. C. H. Pownall, to H.Q., India, 16/1. D. W. Wilson, to R.A.F. Depot, Egypt, 23/12. Flying Officer R. Bassett, to R.A.F. Depot, Egypt, 10/2. M. W. Keey, to R.A.F. Depot, 8/3.

Accountant Branch.—Squadron Leader T. C. Miller, M.C., to No. 1 Stores Depot, Milton, 18/3. Flying Officers W. J. Heneghan, to Brigade Accountant Office, Iraq, 5/3. M. H. Luker, to No. 47 Sqdn., Egypt, 22/2.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. Expedition, under Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., which left Cairo on Mar. 1 to fly to the Cape and back, arrived at Mongalla, Sudan, on Mar. 10, and at Kisumu, Kenya, on Mar. 13.

No. 55 Squadron Dinner.

The Annual Dinner of the 55 Squadron Association will be held at the Royal Adelaide Gallery Restaurant, King William Street, on March 27 (Boat-Race night) at 7.30 for 8 o'clock.

Full particulars may be obtained from the Secretary, Sq. Ldr. C. H. Nicholas, D.F.C., A.F.C., R.A.F. Staff College, Andover.

R.A.F. SPORTS AND PASTIMES.

The Rugger Cup Final.

Owing to a draw between the C.F.S. and Manston in the semi-finals of the Inter-Unit Rugger Cup and the Consequent replay on Mar. 19, the final has been postponed till Monday the 22nd, when it will be played at Uxbridge at 3 p.m.

Association Football.

The final of the R.A.F. Football Association Challenge Cup between the Electrical and Wireless School, Flowerdown, and the Armament and Gunnery School, Eastchurch, will be played at the R.A.F. Stadium, Uxbridge, on Apr. 14 at 3 p.m.

The final of the Junior Challenge Cup between the R.A.F. Base, Calshot, and No. 2 F.T.S., Digby, will be played at the R.A.F. Stadium, Uxbridge, on Mar. 31 at 3 p.m.

The R.A.F. Point to Point.

The R.A.F. Point-to-Point Steeplechases were held at Kimble on March 4.

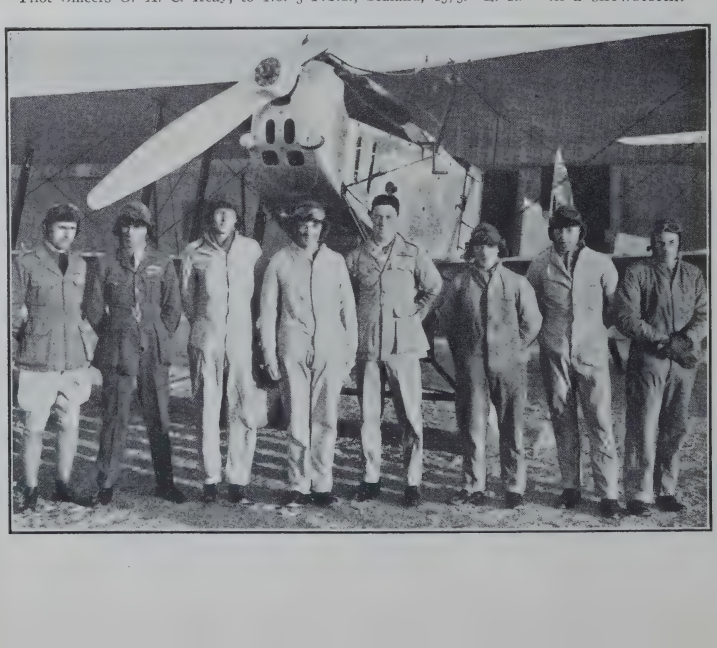
Snow fell heavily just after the second race and continued until just before the last race. This made the going very heavy in the last race. The first race provided an exciting finish, when Air Commodore Longmore's "Kestrel" (Owner) beat Wing Cdr. Read's "Hackston" (Owner) by a short head.

In the third race Sq. Ldr. Everidge's "Regina" (Owner) won by a field although giving a stone to all other starters.

In the fourth race, Flg. Off. King's "The Shifter" (Flt. Lt. George) won a good race well ridden by Flt. Lt. George in a snowstorm.

Halton and Air Ministry tied for the first place in the Team Challenge Cup Competition. No. 7 Group and Cranwell tied for the second place, and Coastal Area were third.

It is interesting to note how large a part the former Naval officers play in the R.A.F in the hunting field. Air Vice-Marshal Scarlett, Air Vice-Marshal Lambe, and Air Comm



THE R.A.F. CAPE FLIGHT.—The personnel of the R.A.F. Expedition to the Cape. This group includes Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C. Flt. Lts. E. C. Emmett, M.C., D.F.C. W. E. Reason; P. H. Mackworth, D.F.C.; E. J. L. Hope, A.F.C.; and L. E. M. Gillman and Flg. Offs. A. Jones and W. L. Payne.

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—says Cobham.

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dore Longmore, all late R.N., are the only officers of their ranks who appear in the programme.

The results were :—

1.—R.A.F. Light-weight Steeplechase : (1) Air Commodore Longmore's *Kestrel* (Owner); (2) Wing Cdr. Read's *Hackston* (Owner); (3) Sq. Ldr. Hanmer's *Heiress* (Owner).

2.—Farmers' Steeplechase : (1) Mr. S. Rose's *Captain Doleful* (Mr. Allen); (2) Mr. O. J. Bates's *Little Tango* (Mr. Chilton); (3) Mr. T. J. James's *Back to the Land* (Owner).

3.—R.A.F. Heavy-weight Steeplechase : (1) Sq. Ldr. Everidge's *Regina* (Owner); (2) Sq. Ldr. Hanmer's *Vanity* (Owner); (3) Air Vice-Marshal Scarlett's *Axle* (Sq. Ldr. Fowler).

4. R.A.F. Novices' Steeplechase : (1) Flg. Off. H. E. King's *The Shifter* (Flt. Lt. George); (2) Air Commodore Longmore's *Kite Hawk* (Owner); (3) Sq. Ldr. G. G. A. Williams's *Turbantia* (Owner).

5.—Nomination (Open) Race : (1) Major C. Stedall's *Whose Sazzy* (Owner); (2) Capt. G. W. Clayton's *Foxtot* (Owner); (3) Mrs. E. M. Gordan's *Our Club* (Mr. T. Mason).

Cross-Country.

The No. 7 Group Cross-Country Run.—This run was held at Andover on Mar. 12.

The Team result was : (1) Upavon, (2) Andover, (3) E.W.S., Flowerdown, A. Team, (4) Farnborough, (5) Netheravon, (6) Old Sarum.

The Individual result was : (1) AC. Bell (Upavon), (2) L-AC. Taylor (Andover), (3) L-AC. Smith (Netheravon).

Boxing.

The R.A.F. Individual Boxing Championships were held at Halton on Mar. 10 and 11. The results were :—

Officers.

Feather-weight.—Semi-final Round : Plt. Off. A. C. Watkins (Digby) beat Flt. Lt. H. E. Walker (British Embassy, Paris) on points. Flt. Lt. G. V. Howard (Flowerdown) (holder), a bye. Final Round : Flt. Lt. G. V. Howard (Flowerdown) (holder) beat Plt. Off. A. C. Watkins (Digby) on points

Light-weight.—Final Round : Flg. Off G. H. Loughman (Old Sarum) beat Flg. Off G. Bird (Henlow) after the judges had disagreed, and the referee had ordered an extra round.

Welter-weight.—Semi-final Round : Flg. Off. I. O'Brian McGregor (Old Sarum) (holder) beat Flg. Off. W. N. Lancaster (Manston) in the second round Flg. Off. E. Larman (Manston) a bye. Final Round : Flg. Off. I. O'Brian McGregor (Old Sarum) (holder) beat Flg. Off. Larman (Manston) on points.

Middle-weight.—Final Round : Flg. Off. E. G. Whinney (Uxbridge) beat Flg. Off. W. Cannon (Manston) on points.

Light-heavy-weight.—Plt. Off. W. Walker (Digby) walked over, the two other entrants having scratched.

Heavy-weight.—Flg. Off. P. G. Chichester (Manston) (holder) was the only entrant and walked over.

Airmen.

Fly-weights.—Semi-final Round : AC.1. F. Reynolds (Hawkinge) beat L-AC. H. A. Smith (Henlow) in the second round; AC.1. P. Livingstone (Farnborough) beat L-AC. Hill (Sealand) on points. Final Round : AC.1. Millington (Farnborough) beat A.C.1. S. Reynolds (Hawkinge), the referee stopping the bout.

Feather-weights.—First Series : L-AC. Carroll (Flowerdown) beat AC.2. J. S. Duggan (Calshot) on points; L-AC. J. H. Boteler (Manston) beat AC.2. E. Dunn (Digby) in the first round. Byes : AC.1. J. Bridge (Netheravon) and L-AC. W. Percival (Hawkinge).

Semi-final Round : L-AC. J. H. Boteler (Manston) w.o. L-AC. Carroll (Flowerdown) indisposed; AC.1. J. Bridge (Netheravon) beat L-AC. W. Percival (Hawkinge) in the second round. Final Round : AC.1. J. Bridge (Netheravon) beat L-AC. J. H. Boteler (Manston) on points.

Bantam-weights.—Semi-final Round : AC.1. J. Black (Duxford) beat AC.1. A. Goddard (Digby) on points; AC.2. P. Callicott (Manston) beat AC.2. W. A. Andrew (Flowerdown) on points. Final Round : AC.2. Callicott (Manston) beat AC.1. Black (Duxford) on points.

Light-weights.—First Series : AC.1. R. W. Garrett (Manston) beat AC.2. L. Wood (Hawkinge), who was disqualified; L-AC J. Lambert (Duxford) beat AC.1. W. R. Mack (Spittlegate) on points; AC.1. R. Hughes (Old Sarum) beat AC.1. M. Stone (Netheravon) on points. Byes : L-AC. E. Parsons (Old Sarum), AC.2. N. Snelling (Halton), AC.2. A. F. Griffin (Uxbridge), F-S. J. R. Stone (Farnborough) (holder), and AC.2. R. Dunn (Henlow). Second Series : Lambert beat Garrett in the second round; Snelling beat Griffin in the second round; Stone beat Dunn on points; Hughes beat Parsons on points.

Semi-final Round : AC.1. Garratt (Manston) beat AC.1. P. Hughes (Old Sarum) on points; F-S. J. R. Stone (Netheravon) (holder) beat AC.2. Snelling (Halton) on points. Final Round : F-S. J. R. Stone (Netheravon) (holder) beat AC 1. R. W. Garratt (Manston) on points.

Welter-weights.—First Series : AC.1. R. Gore (Digby) beat AC.1. T. Turner (Hawkinge) on points; L-AC. H. Foreman (Halton) beat AC.2. L. T. Rudder (Bircham) in the second round; AC.1. A. Perrett (Henlow) beat AC.2. Green (Sealand) on points. Byes : Sjt. D. Cawthorne (Halton), AC.2. J. Parry (Uxbridge), AC.2. R. A. Johnson (Uxbridge), AC.1. W. Page (Manston), and L-AC. J. Devlin (Digby). Second Series : Gore and Foreman were both disqualified in the second round; Perrett beat Devlin, who was disqualified; Parry w.o. Cawthorne scratched; Page beat Johnson in the first round.

Semi-final Round : AC.1. A. Perrett (Henlow), w.o., owing to the double disqualification in the second series; AC.1. W. Page (Manston) beat AC.2. Parry (Uxbridge) in the second round. Final Round : AC.1. Page (Manston) beat AC.1. A. Perrett (Henlow) on points.

Middle-weights.—First Series : Cpl. B. Rollason (Halton) beat L-AC. R. Harvey (Netheravon) in the third round; AC.1. W. Bailey (Bircham) beat AC.2. Prestney (Henlow) on points; L-AC. F. W. House (Manston) beat L-AC. A. Rudkin (Halton) on points Bye : L-AC. Bushnell-Wye (Henlow).

Semi-final Round : Cpl. B. Rollason (Halton) (holder) beat AC.1. W. Bailey (Bircham) on points; L-AC. F. W. House (Manston) beat L-AC. Bushnell-Wye (Henlow) on points. Final Round : Cpl. B. Rollason (Halton) (holder) beat L-AC. House (Manston) on points.

Light-heavy-weights.—First Series : AC.1. Williams (Halton) (holder) beat AC.2. R. Robinson (Henlow) in the first round; AC.1. T. Marshall (Felixstowe) beat AC.2. R. Ross (Uxbridge) in the second round. Byes : AC.1. R. W. Walters (Manston), Cpl. E. Gallimore (Felixstowe) L-AC. H. E. Gates (Shrewsbury), AC.2. J. Mather (Halton), L-AC Fisher (Halton), and AC.1. C. Lewis (Bircham). Second Series : Williams beat Marshall on points; Gallimore w.o., Walters failed to report; Gates beat Fisher in the second round; Mather beat Lewis on points.

Semi-final Round : AC.1. W. E. Williams (Halton) (holder) beat Cpl. Gallimore (Felixstowe) in the second round; AC.2. J. Mather (Halton) beat L-AC. E. C. Gates (Shrewsbury) on points. Final Round : AC.1 W. E. Williams (Halton) (holder) beat AC.1. Mather (Halton), the referee stopping the bout in the second round.

Heavy-weights.—First Series : AC.1. F. N. Rudder (Bircham) beat AC.2. A. Donovan (Halton) on points. Byes : AC.2. C. Rider (Calshot) AC.2. S. Watts (Henlow), and L-AC. W. Leighton (Felixstowe).

Semi-final Round.—AC.2. C. Rider (Calshot) beat AC.1. F. N. Rudder (Bircham) on points; AC.2. S. Watts (Henlow) beat L-AC. W. Leighton (Felixstowe) in the first round Final Round : AC.2. Watts (Henlow) beat AC.2. C. Rider (Calshot) on the referee's decision after the judges had disagreed.

Professionals.

Feather-weights.—Semi-final Round : AC.2. A. P. McAvoy (Uxbridge) beat AC.1. H. Wolf (Northolt) on points; L-AC. J. Williamson (Henlow) beat L-AC. A. Warren (Duxford) after the judges had disagreed and the referee had ordered an extra round. Final Round : L-AC Williamson (Henlow) beat AC.2. McAvoy (Uxbridge) on points.

Light-weights.—Final Round : AC.1. J. Stewart (Calshot) beat Cpl Brown (Halton) on points.

Welter-weights.—Semi-final Round : L-AC. L. T. Bill, D.C.M. (Henlow) beat L-AC. Bristow (Halton) on points; AC.1. McCann (Uxbridge) a bye. Final Round : L-AC. Bill, D.C.M. (Henlow) beat AC.1. McCann (Uxbridge) on points.

AIR AFFAIRS IN PARLIAMENT.

AIRSHIP CONSTRUCTION.

In the House of Commons on Mar. 11, in reply to a question by Commander Bellairs, the Prime Minister said that the Committee of Imperial Defence had, in pursuance of combined action between the three fighting Services, formed the conclusion that airships would be largely used for naval reconnaissance. All previous airships had *not* been built under the supervision of the Admiralty. The Admiralty had *not* been fully consulted as to the designs of the two new airships, the aim of the Air Ministry being to produce airships to meet the requirements of all three Services, *e.g.*, as aircraft carriers and for the conveyance of troops as well as for naval purposes. The Prime Minister added that the responsibility for the design and construction of airships had been transferred from the Admiralty to the Air Ministry in 1919/20, together with a portion of the staff hitherto employed on this work by the Admiralty.

Commander Bellairs asked the Prime Minister if he could tell him of any airship that had not been built under the supervision of the Admiralty.

The Prime Minister : Oh, yes; all the airships that were built by the Army.

AIRCRAFT FROM NAVAL DOCKYARDS.

In the House of Commons on Mar. 10, in reply to a question by Mr. Hore-Belisha, the Parliamentary Secretary to the Admiralty said that the Admiralty had turned their attention to a necessity that might arise in the near future of constructing aircraft in the Royal Dockyards and that the technical officials at the Admiralty had



TOWARDS THE CAPE.—The four Fairey III.D machines (Napier engines) of the R.A.F. Cape Flight.

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examined the problems involved. But he understood that the present policy of the Air Ministry was to rely upon the aircraft industry for construction.

ANTI-AIRCRAFT EXERCISES.

In the House of Commons on Mar. 10, in reply to a question by Mr. Thurtle, the Secretary of State for Air said there was to be no organised sham air attack on London. A few machines would fly over London to afford practice to anti-aircraft and searchlight units. There would be no firing.

BRITISH ENGINES.

In the House of Commons on Mar. 10, in reply to a question by Mr. Harmsworth, the Secretary of State for Air said that all the money to be spent on new engines during the next financial year would be spent on British engines. [Which seems rather a reckless promise, in the event of any revolutionary power-plant being discovered abroad.—Ed.]

THE R.A.F. AND THE GUARDS.

In the House of Commons on Mar. 10, Col. Day asked the Secretary of State for Air the number of officers, non-commissioned officers and men of the Brigade of Guards attached to R.A.F. Establishments. Sir Samuel Hoare: "The answer is one officer."

SIR SAMUEL HOARE AT CAMBRIDGE.

Speaking at a meeting of the Cambridge University Aeronautical Society at the Cavendish Laboratory, Cambridge, on February 17, Sir Samuel Hoare, Secretary of State for Air, said that he was particularly glad to meet the members of the Society at a time when the University was showing an added interest in aviation in connection with the starting of the Cambridge University Air Squadron.

He did not think the outside world had grasped the importance of the pioneer work that had already been carried out by Sir Geoffrey Butler. If there were a gold standard for political values Sir Geoffrey Butler should have been Minister and he (Sir Samuel) the Parliamentary Private Secretary. It was Sir Geoffrey Butler with the assistance of the officers of the Air Ministry and the University authorities who had started the University Squadron.

THE UNIVERSITY AIR SQUADRONS.

Sir Samuel Hoare said that there were few recent developments in the field of British flying to which he looked with greater hope and confidence that this new movement started at Cambridge and Oxford. He hoped that these Squadrons with their limitless field of research would provide a pleasant centre for directing the keen minds and fine imaginations of the Universities upon some of the most important problems of the future.

Having been educated in another place which should be nameless, his scientific education, through his own fault, had been neglected and in the same way when he went to the Air Ministry he knew little or nothing about the developments which had taken place or the great future progress that lay before the students of aeronautics. He did not therefore propose to dogmatise upon what ought to be done but would give his audience the general impressions of an ordinary person who became connected with flying a short time before.

A year ago Sir Hugh Trenchard, the creator of the Air Force and a man of long views and weighty judgment, had made a memorable speech at Cambridge upon the place that the Air Force would play in home and Empire defence.

It was to be presumed that as the aeroplane and its armament became further developed flying would revolutionise our system of defence. Neither he nor the Air Staff held the view that the air force was the only force that mattered and that navies and armies were obsolete.

The two practical difficulties that had still to be surmounted were flying by night and flying in a fog. Substantial progress had been made in both these directions. Another outstanding problem was expense.

Organised civil flying was nowhere self-supporting. It was because he believed that civil flying would eventually become self-supporting that he had changed the system of yearly subsidies that had been in force when he went to the Air Ministry to the present system of a ten-year subsidy.

Another difficulty was the building up of an air route that would possess such advantages over a land or sea route as to ensure a sufficient quantity of passengers and freight. It was an obvious difficulty in England and it was a difficulty that could only be met by pushing out our air routes over long distances.

The two Empire routes he had constantly in mind were London to Calcutta and London to Cape Town. He had signed a contract with Imperial Airways for the Egypt to India section to begin next winter, and even this small section would save five to eight days in the carriage of mails and passengers between Egypt and India. He hoped that the demand would force an extension across India to Singapore.

THE AIRSHIP EXPERIMENTS.

Sir Samuel asked his audience to follow the airship experiment closely and sympathetically. The Government had engaged upon it with a full sense of the difficulties before them and a keen memory of the disasters behind them. The lessons of the past had been studied together with all the available evidence that might be procured from scientific research. He would like to pay a tribute to the invaluable assistance in lighter-than-air research that had been obtained from Cambridge in the person of Mr. Southwell.

The programme was proceeding satisfactorily. If the experiment succeeded, London would be brought within 100 hours of Bombay.

He asked his audience not to be depressed by the pessimists who thought that civil aviation was an artificial growth that could not live. If the pessimists had been believed no great inventions would ever have been adopted. He was convinced that as soon as Empire air routes were developed they would become an integral part of our daily life.

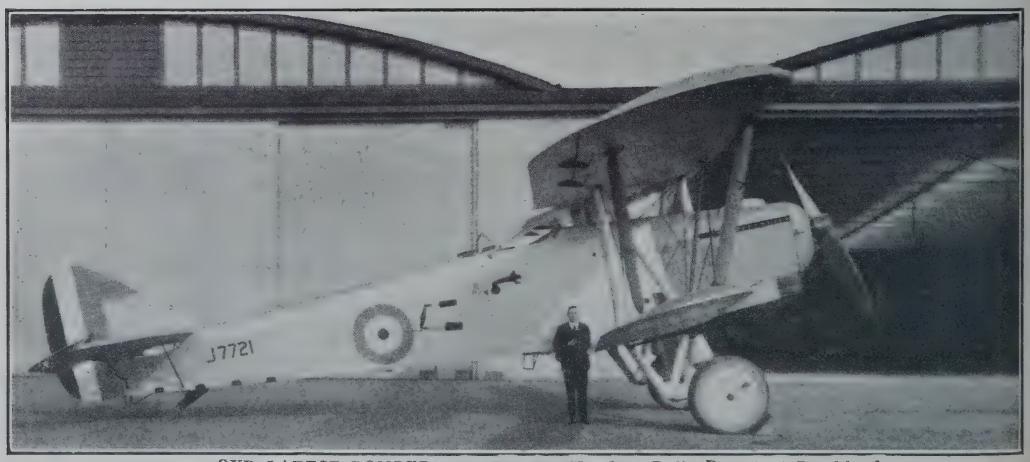
AVIATION AND INDUSTRY.

If flying was to be a healthy growth it must have its established place in the world of industry. There should be the closest possible connection between the Air Force and the Air Ministry and Industry generally. The Aircraft Industry was dependent almost entirely upon the orders of a single Government department, the Air Ministry. This was an unsatisfactory state of affairs but he did not see how it could be remedied until civil flying developed upon a great scale.

The Industry at present was liable to sudden fluctuations brought about by changes of Government policy and even by changes of policy on the part of foreign governments. For it was the strength of foreign air forces and the air policy of foreign governments that to a great extent controlled the air strength and air policy of this country.

There was a general need for linking up our air system with British industry. If for instance the engineering industry would regard service in the Air Force with all its technical training as the equivalent of a certain amount of training in the industry itself our short service pilots would have a career open to them at the end of their five years' service and the industry would gain by the influx of a vigorous strain of practical experience.

The first steps had been taken in this direction and the Institute of Mechanical Engineers had accepted training in



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the Air Force as an alternative qualification for the entry of an Associate. He also hoped that the Auxiliary and Special Reserve Squadrons would create another connection between the Air Force and industry. He hoped that the next few years would see the same kind of interest taken in these squadrons by the great centres of industry and engineering firms as had been taken in the yeomanry and territorials by the counties and county families.

Scientists and Aviation.

The existence of the Cambridge Aeronautical Society, the formation of the University Squadron, the interest of some of the most distinguished scientists in the University and the record of Cambridge scientists both during the war and since the war confirmed him in the hope that flying would be linked more closely with the progress of science.

He had already spoken of the need of safety and comfort if civil flying was to have a great expansion. To a great extent this was a problem of control and stability. The principles on which their distinguished professor, Professor Jones, had done invaluable work must be fully applied in the next few years. In the battle between power and weight the scientists would be able to give invaluable help.

Then there was the body of scientific questions connected with the fatigue of metals. It was from such schools as the Cambridge schools that the squadrons and civil lines would obtain valuable help in increasing the speed, safety and endurance of the machines.

Regarding the question of wireless, Sir Samuel Hoare said that wireless was the key without which the full treasure of flying would never be unlocked. It had revolutionised civil flying and brought new factors of great importance into the field of military flying. He understood that wireless was first practically applied at Cambridge.

Meteorology was another key. The long-distance air routes would depend for their safety on accurate weather reports. In all these directions the scientist would play a foremost part in bringing flying into our general lives. While he hoped that the scientist would be produced in increasing numbers in the Air Force itself, on the other hand the scientist who showed himself to be a fearless pilot would maintain and develop the connection between the theory and practice of flying.

The example of the scientists who lost their lives flying, such as their own Professor of Engineering, Professor Hopkinson, Mr. Keith Lucas of Trinity, and Captain Busk, would never be forgotten. The career of these men was a glorious example of students being also men of action.

SIR SAMUEL HOARE AT OXFORD.

The Secretary of State for Air, accompanied by Air Vice-Marshal Sir Ivo L. B. Vesey, K.B.E., C.B., C.M.G., D.S.O., Director of Organisation and Staff Duties, and Colonel the Hon. Maurice Drummond, C.M.G., D.S.O., Deputy Director of Staff Duties, paid a visit to Oxford on Mar. 5, to inspect the accommodation and equipment of the Oxford University Squadron.

The membership of the Squadron already numbers 27, and the instruction in engines, rigging, wireless telegraphy, piloting, navigating, armament, and aerial photography, is being given at the headquarters in Manor Road, Holywell.

The Squadron will operate as a Unit at a Service aerodrome during a fortnight at the beginning of the Long Vacation, and special training facilities will be given to members of the Squadron during that period.

At a lunch at Exeter College, proposing the toast of Success to the Oxford University Air Squadron, Sir Samuel Hoare said that he thought he could claim that the Air Ministry had not wasted much time in providing the buildings and organisation for this interesting experiment. The University had given a great deal of help. It had given them as Chief Instructor, Wing Cdr. H. R. Raikes, A.F.C., wh held the double distinction of being sub-Rector of Exete and a former officer of the R.A.F.

The Squadron was not intended to create a military uni taking its place with other military units of the Air Force nor to provide flying for undergraduates in term time.

The Squadron had been formed for three reasons. Firs it was hoped to make the connection closer between th University and the Air Force, and, as an outward result, t increase the number of University candidates for commis sions. Secondly it would give instruction to some of th many members of the University who were interested in th technical side of aeronautics. And thirdly it would provid some further opportunity for any who wished to do som original research work in the ever-widening field of aviation

So far flying had done more harm than good to the worl but he hoped the balance would be reversed in the nex generation.

OFFICIAL SECRECY AND THE HORNBILL.

One always has to go abroad for news. In this country th existence of the Hawker Hornbill is a deadly secret, and strictly accordingly to the Law, anybody referring to it i liable to prosecution under the Official Secrets Act, or som relic of wartime suppression of the freedom of the Press But abroad anybody who likes can talk and write as muc as he likes about the innermost secrets of Sir Geoffrey Sal mond's department of the Air Ministry.

For example, the following extract from the evidence give on Sept. 30, 1925, by Colonel William Mitchell of the U.S Army Air Service, before the President's Aircraft Board o which Mr. Dwight W. Morrow was the Chairman, will b found of interest :—

> "Now, to show you what success the British Air Forc has been and what confidence it has with the people it has continually increased in its size, in the number o ships it used, and in its appropriations Their de velopment now is that right now their ships—tha is, their Service ships—are probably the fastest in th World. The Service Pursuit ship with which they are ex perimenting now is making 210 miles an hour. It is th Hawker Hornbill ship."

Personally, one is without any knowledge of the actua performance figures of the Hornbill, but knowing the accurac with which the U.S. Air Services handle figures, and know the efficiency of their Intelligence Department, apart fron knowing the intimate knowledge which Colonel Mitchell ha of the Air Services of all nations, one is prepared to accep the figure mentioned. The Hawker Company deserves con gratulations on having turned out a pursuit ship with suc a performance.

Lest the underlings of Sir Geoffrey Salmond's Departmen should think that one is quoting from a confidential Americar document, one would point out to them that the extract i taken from the report known as the "Morrow Report," an called officially "Hearings before the President's Aircra Board," published by the Government Printing Office i Washington and that the four volumes of the report may b procured for a few dollars.

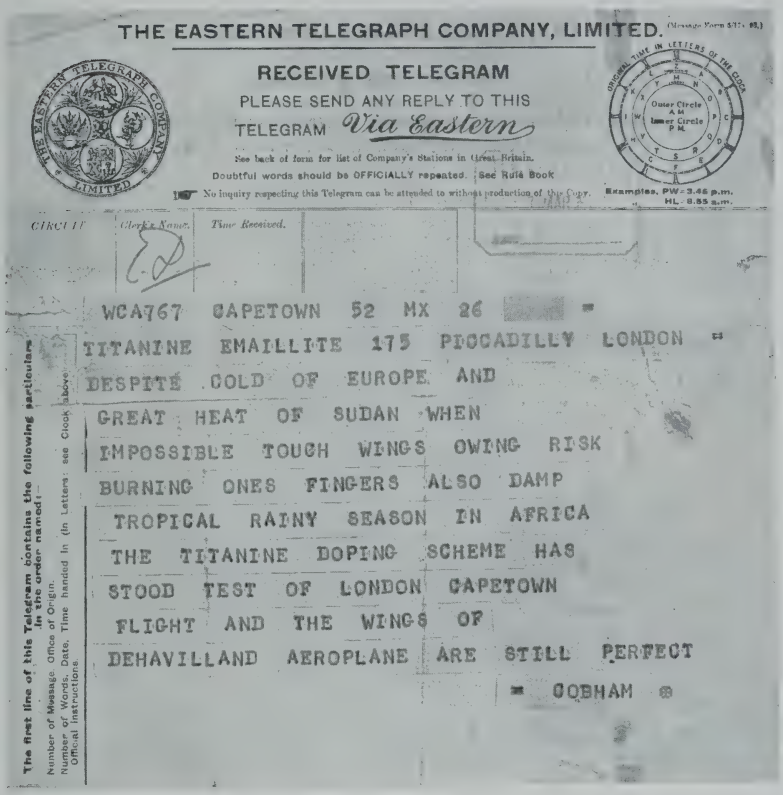
The Report of the Lampert Committee, which is also publi property, contains even more valuable information,—fron which one proposes to quote as and when occasion demands

The foregoing extract, at any rate, shows the utter folly o keeping secret in England, to the detriment of our Aircraf Industry, facts which are perfectly well known to the Ai Services of other foreign nations. Ridicule kills quicker than argument and perhaps after a while the officials of Sir Geoffrey Salmond's Department will see how ridiculous they are mak ing themselves.



STANDING AT EASE.—The Hawker Horsley (Rolls-Royce) Bomber at Brooklands.

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ANOTHER STRIKING PERFORMANCE.

Since receipt of the above cable Mr. Alan Cobham has returned to London, having completed 16,000 miles. The surfaces of the planes were in perfect condition.

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NEW ADVANCED TRAINING MACHINES.

There are at present under construction for the Air Ministry three new types of two-seater advanced training machines. These machines are intended generally as a step-up in all-round performance from the standard Avro training type, but more especially for training Fleet Air Arm pilots in the art of deck flying. That is to say, they come into a pilot's career midway between his elementary training on Avros or Moths, or machines of that sort, and his ultimate development as a complete aviator in charge of high speed scouts, general purpose machines, or big bombers.

These machines, which are the Spratt (Blackburn Aeroplane and Motor Co. Ltd.), the Perch (G. Parnall and Co. Ltd.) and the Vendace (Vickers Ltd), are all tandem two-seater biplanes with folding wings, interchangeable float or wheel undercarriages, and Rolls-Royce Falcon engines of 290 h.p.

Contrary to standard practice in machines to Air Ministry requirements, a special effort has been made to keep the equipment requirements for this type down to the minimum possible, the idea being that the machines are for flying training and should therefore be as nearly as possible unhampered flying machine. Deck flying, which is to be one if not the main part of their duties, calls for the best possible "get-off" performance—low stalling speed, and rapid acceleration, together with the maximum controllability and manœuvrability at low speeds.

These machines may therefore be expected to have an excellent all-round performance—for the get-off conditions prescribe ample reserve power—and should be of very great practical value not only for the training purposes for which they are intended, but also in indicating to the R.A.F. and the Air Ministry how good a flying machine an ungadgetted aeroplane can be.

THE VICKERS VENDACE.

Vickers Ltd. have just produced the Vendace, a new training machine of the class which is now in process of production by a number of firms in Great Britain, and it should be a most valuable addition to the equipment of any air service.

The Vendace is a biplane with sea or land undercarriage. It has tandem seating in the ordinary way and is fitted with dual control in open cockpits.

In order that it may be used for cross-country training of the most advanced kind the metal parts of the interior structure are bonded for wireless so that radio sets can be installed if required. Also it is wired internally for navigation lights.

Pending the type trials of the first machine no guaranteed performance is offered but the usual calculations, which in the case of a firm of the standing of Vickers Ltd. are within a very minute percentage of strict accuracy, shows that its full speed near the ground should be about 117 m.p.h. (188 km.p.h.).

Its climb to 5,000 feet (1,525 metres) is about five minutes. And its service ceiling is calculated to be 2,500 feet (6,24 metres).

Its minimum flying speed is calculated to be 44 m.p.h (71 km.p.h.) so that its landing speed in the hands of a competent pilot should be considerably less.

The spars of the main planes are of box section, built up o spruce and plywood. The ribs are of spruce. The compres sion members are of spruce segmented tubes.

The interplane struts are of streamlined steel tubing. Th internal bracing is done with swaged steel tierods. And th load and landing wires are streamlined steel tierods.

The fuselage is built of mild steel tubing braced by swage steel tierods and faired with laths and fabric.

The undercarriage is built of streamlined steel tubing, wit a high tensile steel axle carrying the usual standard Palme tyres and wheels. The springing is done by the Vicker oleo-pneumatic device.

The engine mounting is entirely of mild steel tubing braced with swaged steel tierods.

The structure of the tail plane and elevators is similar t that of the main planes. The rudder post is of steel tubing and the framework of the rudder is of duralumin tubing.

The petrol tanks are fitted in the wings and all petro is gravity-fed. The pipe couplings are of the screwed metal to-metal type.

All the usual navigating and indicating instruments are fitted, so that with the exception of armament the machine is fit for any flying such as is done by fully equipped Service aircraft.

SCHNEIDER TROPHY RUMOUR.

It is rumoured that Sir Sefton Brancker is not getting much change out of the N.A.A. of America with whom he has been sent to plead for a postponement of the Schneider Trophy Contest.

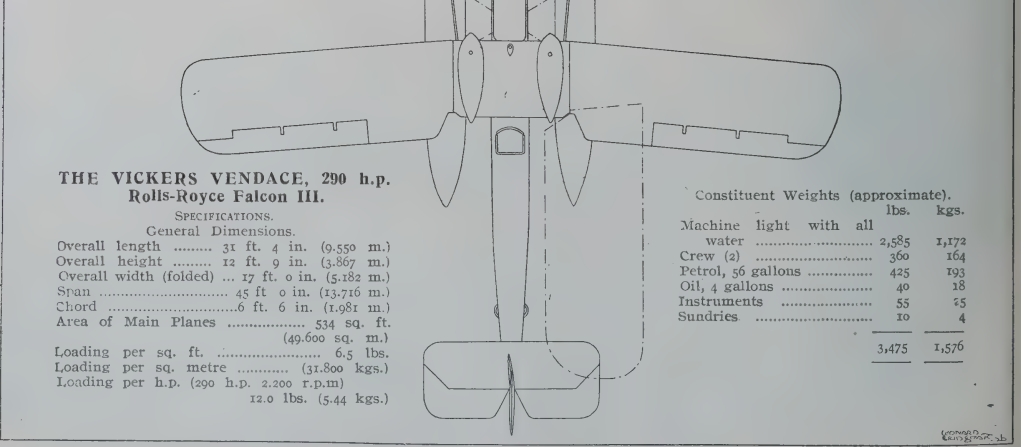
It is rumoured that Lt.-Col. W. A. Bristow's "Crusader" is being built by Short Bros.

It is rumoured that one Supermarine-Napier S.5 will be built but that there will be no time to build more.

It is rumoured that Mr. Sam Saunders is quite determined on building his machines and sending them over this year.

It is rumoured that Sir Geoffrey Salmond's department is becoming mid-Victorianly hysterical over its frantic efforts to get the contest postponed.

It is rumoured that a number of people do not care one iota for the opinions and desires of the Research Department in the matter of Schneider Trophy machines—or anything else. The only thing they do worry about is the money that the taxpayer has to spend to keep that department going in its present form.



THE VICKERS VENDACE, 290 h.p. Rolls-Royce Falcon III.

SPECIFICATIONS.

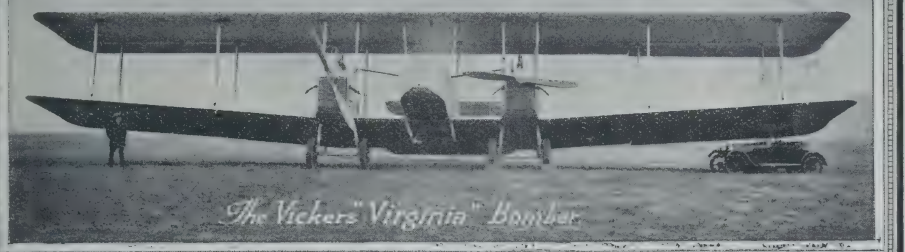
General Dimensions.

Overall length	31 ft. 4 in. (9.550 m.)
Overall height	12 ft. 9 in. (3.867 m.)
Overall width (folded)	17 ft. 0 in. (5.182 m.)
Span	45 ft 0 in. (13.716 m.)
Chord	6 ft. 6 in. (1.981 m.)
Area of Main Planes	534 sq. ft. (49.600 sq. m.)
Loading per sq. ft.	6.5 lbs.
Loading per sq. metre	(31.800 kgs.)
Loading per h.p. (290 h.p. 2.200 r.p.m)	12.0 lbs. (5.44 kgs.)

Constituent Weights (approximate).

	lbs.	kgs.
Machine light with all water	2,585	1,172
Crew (2)	360	164
Petrol, 56 gallons	425	193
Oil, 4 gallons	40	18
Instruments	55	25
Sundries	10	4
	3,475	1,576

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Vickers "Vixen" two-seater finishing in Kings Cup Race, 1924.



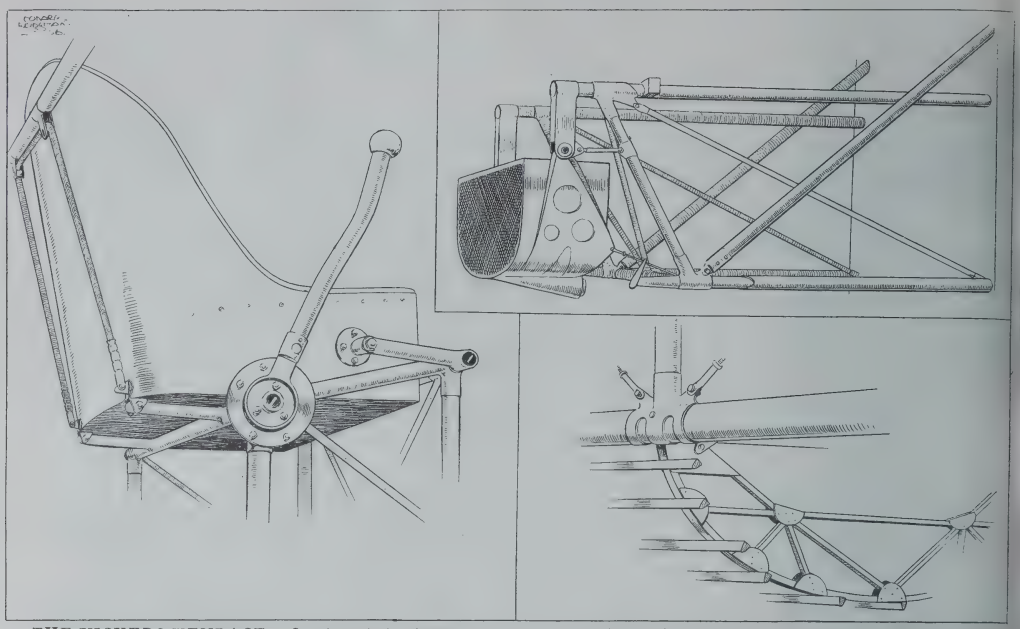
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Vickers "Vulcan" 8 Passenger Commercial Aeroplane



THE VICKERS VENDACE.—On the left is shown one of the two adjustable seats, at the top on the right the steel tube engine bearers and radiator mounting, and at the bottom a typical fuselage fitting and the method of supporting the wooden stringers for the fuselage fairing.

THE MAINTENANCE OF METAL AEROPLANES.

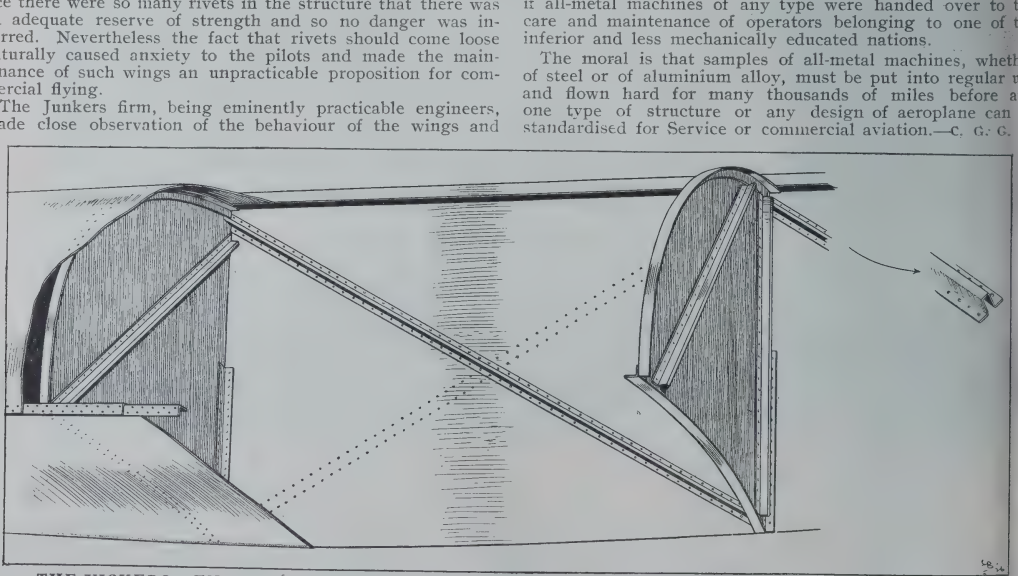
Some months ago when describing one's visit to Germany one suggested that although all-metal aeroplanes must eventually supplant wooden aeroplanes, if only because there is not enough timber available in the World to keep even one first-class air force going in a great war, the time had not yet come when we can safely standardise all-metal aircraft for production like cheap cars. Some people who read these notes are inclined to scoff at the idea of metal aeroplanes falling to pieces in the air owing to uncalculated vibrations and so forth. Therefore one has the more satisfaction in making public some recently-acquired information on the subject.

One is told on good authority that when the first few three-engined Junkers monoplanes were put into regular use on air lines it was noticed that a number of rivets were in the habit of coming loose inside the wings. In actual practice there were so many rivets in the structure that there was an adequate reserve of strength and so no danger was incurred. Nevertheless the fact that rivets should come loose naturally caused anxiety to the pilots and made the maintenance of such wings an unpracticable proposition for commercial flying.

The Junkers firm, being eminently practicable engineers, made close observation of the behaviour of the wings and finally located certain very small vibrations which evident caused these rivets to come loose. These vibrations we traced to the influence of the slip-stream of the central a screw on the airscrews of the side engines. The trouble h now been overcome by placing the side engines at a great distance from the centre-line of the machine so that th are away from the influence of the central slip-stream.

In the hands of such efficient people as the Junkers fir troubles of this kind are always likely to be located before accident occurs. In the early days of Zeppelin airship according to the legends, a man with a dust-pan and bru used to crawl along the inside of the bottom of the envelo and sweep up the rivets which had fallen out of the girde On the same principle the Junkers people are bound to on the look-out for any signs of failure in their all-met structure and are sure to locate the cause of failure good time. But one can readily imagine what might happ if all-metal machines of any type were handed over to t care and maintenance of operators belonging to one of t inferior and less mechanically educated nations.

The moral is that samples of all-metal machines, wheth of steel or of aluminium alloy, must be put into regular u and flown hard for many thousands of miles before a one type of structure or any design of aeroplane can standardised for Service or commercial aviation.—C. G. G.



THE VICKERS VENDACE.—Sketch showing the internal construction of the duralumin floats for the seaplane version of the Vickers convertible two-seater training land or seaplane.

93234
PASSENGERS

656½ TONS FREIGHT

CARRIED IN THE YEAR 1925 BY
JUNKERS
ALL-METAL AIRCRAFT

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

A REAL LIFE-SAVER.

On March 12 Major H. H. Evans gave a very interesting demonstration at the Westminster Baths of a new life-saving flying-suit for aviators. It is cut very much on the lines of the standard Sidcot suit, but instead of being quilted with kapok or some such cotton-like material it is padded with a species of aerated rubber known as *mousse*, or "foam," which is in texture very like *mousse de jambon* or similar comestible—a kind of *soufflée* made of rubber.

The gasification of the rubber takes place under high pressure while it is in a liquid state. The result is an extremely light composition which is about one-fifth of the weight of cork. There are of course many uses to which a substance of this nature can be put, but that with which we are immediately concerned is the floating flying suit.

The suit is made of ordinary gabardine material and is interlined with the mousse rubber. Similar floating suits have been made with kapok enclosed in waterproof material, but the objection to this is that the outer material may cease to be waterproof and so let water in just when flotation is most needed, or the material may be torn in an accident or may be perforated by bullet holes, in which case the kapok would become water-logged and allow the wearer of the suit to sink. Also garments lined with kapok when kept in store are liable to be eaten by rats and mice, who appear to appreciate kapok as a lining for their nests. No vermin will attack mousse rubber as there is apparently nothing attractive about it.

Also the life of mousse rubber is indefinite, and water, whether salt or otherwise, has no effect on it. The buoyancy of a suit which is made with mousse rubber cannot be affected, for no matter how the material may be torn or punctured the rubber itself still maintains the same power of flotation. As a side-issue, this mousse rubber, being aerated as it is, makes an excellent insulator against cold so that it is both wind-proof and cold-proof.

A complete suit, of the Sidcot type, for a man weighing thirteen stone weighs between 8 and 8¼ lbs. and, as demonstrated by Mr. Bateman, who is a powerful and expert swimmer, maintains a man breast high out of the water in a vertical position and allows him ample buoyancy to support another person who has no flotation equipment. For those who want to make assurance doubly sure Major Evans has patented a detachable breast-pad, made of mousse rubb which is attached to the front of the ordinary suit and is placed that it will keep the face of an unconscious man of the water.

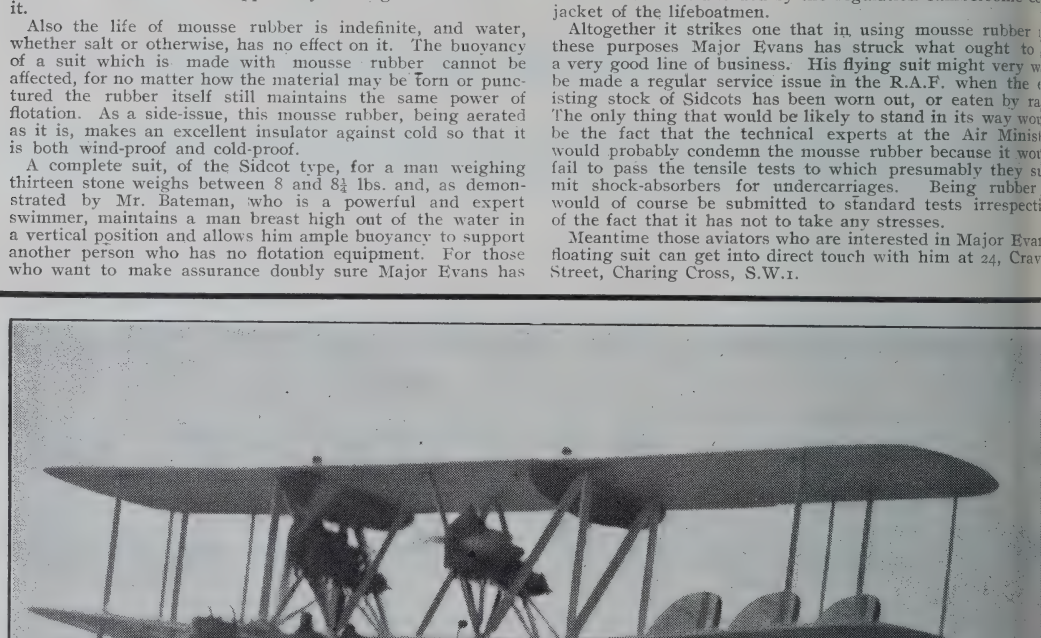
The reason for having it detachable is that if an aeropl comes down in the water and turns over, the pilot and the passenger may be imprisoned in the cockpit and, ow to the buoyancy of the breast-pad, may not be able to fo themselves down into the water so as to keep clear of wreckage. By detaching the breast-pad, the user can crease his buoyancy by that amount and so have a bet chance of getting clear. Should the user thereafter reco the pad from the wreckage he can stuff it inside the bre flap of his suit and again be protected from falling forw on his face should he later become unconscious.

Another garment which Major Evans showed is in form of an ordinary reefer jacket, such as is worn by s faring men, professional and amateur. It is just as weath proof, so far as it goes, as the complete Sidcot suit and wo make a nice garment for cross-Channel pilots in Sumn weather. Quite apart from its buoyancy it is a good use driving coat under any circumstances.

Another garment is an ordinary oilskin jacket of the t worn by lifeboatmen, but with mousse pads made to butt onto the front of the jacket where they do not impede use of the arms anywhere. These pads will give all flotation which is afforded by the regulation cumbersome co jacket of the lifeboatmen.

Altogether it strikes one that in using mousse rubber these purposes Major Evans has struck what ought to a very good line of business. His flying suit might very w be made a regular service issue in the R.A.F. when the isting stock of Sidcots has been worn out, or eaten by ra The only thing that would be likely to stand in its way wo be the fact that the technical experts at the Air Minis would probably condemn the mousse rubber because it wo fail to pass the tensile tests to which presumably they s mit shock-absorbers for undercarriages. Being rubber would of course be submitted to standard tests irrespecti of the fact that it has not to take any stresses.

Meantime those aviators who are interested in Major Eva floating suit can get into direct touch with him at 24, Cra Street, Charing Cross, S.W.1.



Supermarine "Southampton" Twin Engined Flying Boat.

(TWO 450 H.P. NAPIER LION ENGINES.)

AS AN EXAMPLE OF WIDE RANGE OF DESIGN. CONTRAST THE ABOVE TWIN ENGINED MACHINE WITH THE **SUPERMARI NAPIER S4** MONOPLANE DESIGNED AND CONSTRUCTED FOR THE SCHNEIDER CUP RACE, 19.5.

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SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew the NORTH ATLANTIC (1,890 miles non-stop).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to AUSTRALIA (11,500 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to SOUTH AFRICA (6,281 miles).
FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

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C.P.

THE CATERPILLAR CLUB.

There exists in the United States a club known as the Caterpillar Club, the membership of which is open solely to those individuals who owe their lives to the parachute. The present membership amounts to twenty-five, ten of whom automatically joined in 1924 and twelve during 1925.

The majority are members of the U.S. Army, Navy, Marine Corps or civilian staff of the McCook Field Experimental Station.

There is one woman member, Mrs. McFarland, professional parachute jumper. A U.S. Army regulation calls for the use of the recognised Service parachute pack in all jumps made over an Army field. Mrs. McFarland's own parachute failed when demonstrating at a military aerodrome, and by using, at the last moment, the Irving pack-parachute, which she had been compelled by regulations to wear also, she made a safe landing.

FRENCH COMMERCIAL AVIATION.

Recently published statistics of French commercial aviation reveal some interesting comparative figures concerning passenger freight and mail traffic for 1925 and the previous years.

The Air Union carried 7,782 passengers and more than 481 tons of goods between Paris and London in 1925, as compared with 2,421 passengers and 285⅝ tons of goods in 1923.

Between Paris and Amsterdam the same company carried 3,985 passengers and 170 tons of freight in 1925 as compared with 1,966 passengers and 81½ tons of freight in 1923.

The Latécoère Co., which operates between Toulouse and North Africa, carried over 7⅝ million letters, a weight of over 150 tons during 1925. Compared with 1919, when the company carried 9,124 letters (about three cwt.), this figure is remarkable, and demonstrates the real commercial value of aviation.

AEROPLANES FOR ROUMANIA.

Roumania seems to be having trouble in connection with the purchases of aircraft for their Military Air Service.

In the first place a large number of British single-seater aircraft were ordered and this order was cancelled.

Then a similar number of Fokker single-seaters were ordered. And, as the result of the placing of this contract, the Roumanian Military Mission who were responsible for this order were court-martialled, and the order is still the subject of a court of inquiry.

On Feb. 16, a prominent Roumanian citizen, representing this second company, was arrested in Bucharest. He is alleged to have received a large sum of money through a German bank for distribution among four persons who w concerned with the placing of this contract.

In the meantime it is reported that an order has been pla in France for 60 Spad 61 fighters (450 h.p. Lorraine-Dietr engines).

Also there are at present two Roumanian Military Missio one in England and one in France, presumably charged w authority to purchase aircraft.

A FRENCH AIR MISSION IN PERSIA.

The Paris correspondent of *The Times* states :—

Telegrams from Teheran announce the arrival there of three Fre aeroplanes of the mission which was sent out last month under auspices of the French Government to undertake propaganda Persia for the French military flying corps and the air industry.

The mission, which originally consisted of four machines pil by four officers, left Paris on Nov. 6. It met with much ill-luck first, for one of the machines crashed in the Jura; the pilot injured and his place had to be taken by another. The officer c manding the mission, Commandant Dagnaux, broke the undercarri of his machine in landing in Yugoslavia, and was unable to contir but the three other pilots have now successfully completed th journey, flying by way of Constantinople, Aleppo, and Baghd They propose to spend a few days in Teheran and then to ret by easy stages to France.

JUNKERS IN PERSIA.

The Persian Majless has ratified the Junkers agreem which provides for a five-years' aerial monopoly of Teheran-Enzeli, the Teheran-Bushire, and the Teheran-Sa tov lines. These lines will begin operations within one mo and it is said that at least one will be connected with Eu pean lines within six months.

A subsidy of one shilling and sixpence is payable by Per on every kilometer flown during the next eight months, p £500 monthly for carrying mails.

OVER EVEREST.

A French expedition, headed by M. Callizo, the holder the World's altitude record, is to proceed to India some ti in March with a view to attempting to fly over the summ of Mount Everest. He will use a Bleriot Spad two-sea aeroplane fitted with a supercharged engine, and will ca an American cinematograph operator.

MADRID-PHILIPPINE ISLANDS.

Capts. Martinez, Gonzalez and Longa, of the Spanish Arm are preparing to fly from Madrid to Manila.

They will use two Spanish-built Breguet XIX biplan (450 h.p. Lorraine-Diétrich engines) and will fly via Algie Tunis, Tripoli, Cairo, Jerusalem, Baghdad, Karachi, Ag Calcutta, Rangoon and Siam to Manila, 12,000 miles.

Capt. Longa is the officer who conducted the early expe ments on the Cierva "Auto-Giro."

MR. ALAN COBHAM'S FLIGHT TO THE CAPE and BACK and to INDIA and BACK, in all 33,000 Miles, in the SAME MACHINE FITTED WITH

MALLITE

PLYWOOD

MR. ALAN COBHAM CABLES: "The three-ply has stood test, LONDON—CAPETOWN flight, perfectly through Tropics."

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The AERONAUTICAL & PANEL PLYWOOD CO. LTD.

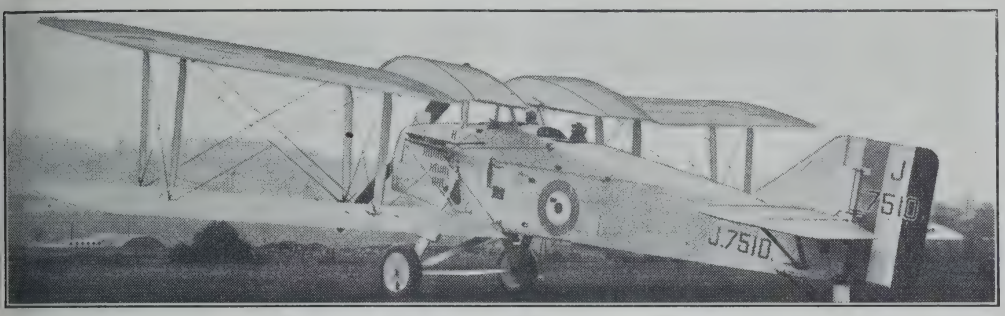
218-226, KINGSLAND ROAD,

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Telegrams : Vieply, Kinland, London.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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Telegrams: Aircraft 141, Yeovil.

THE CURTISS TYPE-TEST.

Rumours of all kinds, having been in circulation for the past month or two, one has the more pleasure in announcing that the Curtiss D.12 engine (to be known as the Fairey Felix when built in England) has successfully passed the Air Ministry's 100-hour type-test.

The question of whether this particular engine will be granted a certificate is at present in abeyance. A small screw came out of the scavenger oil-pump after 92½ hours' running, and the engine had to be stopped while the pump was re-fitted. After a brief delay the engine was started again and the remaining 7½ hours were run off without a hitch.

The granting of a certificate depends on whether that stoppage is regarded as a major or a minor breakdown by the Test Department at the Air Ministry.

THE NEXT R.Ae.C. HOUSE DINNER.

The next Monthly House Dinner of the Royal Aero Club will be held at the Club on Thursday, Mar. 23, at 7.15 p.m.

The subject for discussion will be "The Future of Flying" and the debate will be opened by The Right Hon. Sir Samuel J. G. Hoare, Bart., C.M.G., M.P., Secretary of State for Air. His Grace the Duke of Sutherland, Chairman of the R.Ae.C. Club, will preside.

The number of diners is limited to sixty, so early application for seats is advisable. Tickets are 6s. each, and may be obtained from The Secretary, the Royal Aero Club, 3, Clifford Street, W.1. Morning dress will be worn.

THE AEROPLANE CLUBS.

The London Aeroplane Club.

Flying time for the week ended Mar. 14 was 17 hrs. 30 mins.

The following members had dual instruction:—L. G. Anderson, J. Barros, Sir John Rhodes, E. D. Moss, R. P. Cooper, E. K. Blyth, S. O. Bradshaw, Mrs. Fliott-Lynn, K. Kennedy, R. Malcolm, G. W. H. Wallcousins, J. S. M. Michie, T. H. O. Richardson.

The following members made solo flights:—N. Jones, Mrs. Eliott-Lynn, G. N. Warwick, Sq. Ldr. M. E. A. Wright.

The Club machine, piloted by Capt. F. G. M. Sparks, formed one of the escort which met Mr. A. J. Cobham on his return from South Africa on Saturday.

Messrs. P. G. Lucas and W. E. P. Johnson have been appointed to commissions in the Royal Air Force, and Mr. G. N. Warwick to a commission in the R.A.F. Reserve.

Mr. David Kittell, who has recently taken delivery of his D.H. Moth, has already put up over 14 hours' flying.

The subscriptions towards the purchase of the third D.H. Moth are coming in very satisfactorily. Those already published amount to £555. Since then the following have been received:—Capt. G. de Havilland £50, Messrs. V. H. Doree £20, O. H. H. Pollard £10, R. P. Cooper £5, S. C. Richards £5, Commandant Allen £3, Miss Tagart £3, Messrs. R. Malcolm £3, L. C. J. Mitchell £3, A. Southgate £3, L. G. Anderson £2, E. K. Blyth £2, A. Lees £2, H. R. Thomas £2, C. E. Murrell £2, W. E. D. Johnson £2, J. Barros £1, E. D. Moss £1, R. L. Preston £1, G. H. Wallcousins £1, Capt. Lamplough £1, Miss O'Brien £1. Total to date £678.

The Lancashire Aero Club.

The weather has been exceptionally bad, a gale preventing any flying except on Saturday and Sunday.

On Wednesday the small hangar was blown down and completely wrecked, fortunately the three Moths had been removed a short time before and so escaped, but the L.P.W. lies among the fallen girders.

Instruction was given by Mr. Stack: Messrs. C. Barnes (1 hr. 5 mins.), C. Parker (55 mins.), J. Leeming (1 hr. 5 mins.), A. Macnair (40 mins.), C. Agar (25 mins.), P. Michelson (40 mins.), F. Gattrell (30 mins.), W. Colley (50 mins.), A. Slater (40 mins.), C. Brown (30 mins.), R. Williams (20 mins.), D. Dyson (10 mins.), and A. Goodier (25 mins.).

Instruction by Mr. Cantrill: Mr. A. Goodier (30 mins.)

Instruction by Mr. Scholes: Messrs. A. Macnair (25 mins.), W. Harden (25 mins.), F. Davison (30 mins.), and C. Agar (20 mins.)

Solo flights by M. Lacayo (1 hr. 15 mins.) and A. Goodfellow (20 mins.).

Tests occupied 25 mins.

Joy-rides were given to Miss Betty Chester (15 mins.), Miss Barbara (10 mins.), and Mrs. B. Smith (15 mins.).

Total dual, 10 hrs. 45 mins. Total solo, 1 hr. 55 mins. Tests, 25 mins. Joy-rides, 40 mins.—Total time flown, 13 hrs. 25 mins.

A new Avro biplane will be presented to the Club by Sir William Letts on Apr. 16.

The Newcastle-upon-Tyne Aero Club.

Report for week ending Sunday, Mar. 14, 1926.

The gale which has been experienced for over a fortnight continued during the week, until Saturday, when it abated a little. Previous to that all the flying which had been possible was one hour on Wednesday evening and 35 minutes on Friday. Sunday brought much better weather although it was very dull, and over six hours was put in on the one machine in service, G-EBLY. Total time for the week—10 hrs. 5 mins.

Dual with Major Packman: Mrs. Marcks, Mr. Sandilands, Mr. C. Thompson, Mr. Bruce, Mr. L. Smith, Mr. W. Todd, Mr. M. G. Thirlwell, and Mr. Bainbridge. Total 6 hrs. 10 mins.

Secondary dual also with Major Packman: Miss Leathart and Mr. W. M. MacKay. Total 35 mins.

"A" Pilots: Mr. R. N. Thompson, Mr. W. Baxter Ellis, Mr. N. S. Todd. Total 3 hrs 5 mins. All, of course, flew with friends as passengers.

Mr. Ovens was the only passenger and had one 15 mins.' flight.

Further straight flights were carried out on Mr. Ellis's Gull on Sunday, but before anything further could be attempted two of the rubber shock-absorbers, which are very old, broke.

Repairs to LX are well in hand and, with a return of good weather conditions, it is hoped that it will soon be possible to make up for all the time lost during the past two or three weeks.

Throughout Mr. Cobham's Great Flight

WAKEFIELD Castrol MOTOR OIL

was the lubricant employed.

Mr. Cobham cabled from Cape Town:—

"CONGRATULATIONS ON YOUR WONDERFUL CASTROL R OIL WHICH HAS LUBRICATED MY AIR-COOLED SIDDELEY ENGINE SO SUCCESSFULLY ON OUR FLIGHT FROM LONDON THROUGH TROPICAL AFRICA TO CAPE TOWN.—ALAN COBHAM."

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GLOSTER "GROUSE II." Two-seater dual control training Machine with Lynx engine.

WINNERS OF THE AERIAL DERBY, 1921, 1922, 1923.

RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion Engine.)

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 6; Wednesday, 14; Thursday, 14; Friday, 14; Saturday, 18; Sunday, 4.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam:—Amsterdam—Berlin: Machines 46, passengers 126, freight 10 tons.

AIR UNION:
Paris—London: Machines 24, passengers 64, freight 11 tons.

K.L.M.
Amsterdam—Rotterdam—London: Machines 10, passengers 12, freight 1 ton.

DE HAVILLAND:
1 machine from Cape Town.

Total number of trips by British Machines, 46, carrying 124 passengers. Foreign Machines, 32, carrying 73 passengers.

Comparative Figures:

Week ending Mar. 14:
Machines, 78; Passengers, 197; Crews, 90; Total personnel, 287.

Corresponding week, 1925:
Machines, 55; Passengers, 126 Crews, 67; Total personnel, 193.

Corresponding week, 1924:
Machines, 114; Passengers 259; Crews, 194; Total personnel, 453.

Corresponding week, 1923:
Machines, 67; Passengers, 207; Crews, 126; Total personnel, 333.

Corresponding week, 1922:
Machines, 53; Passengers, 113; Crews, 88; Total personnel, 201.

Corresponding week, 1921:
Machines, 35; Passengers, 92; Crews, 43; Total personnel, 135.

Croydon Notes.

Mr. Cobham's return on Saturday is dealt with elsewhere in this paper. Everyone is agreed that whatever one can say there is no getting away from the fact that it was a thoroughly good show and is more than usual a personal triumph for Mr. Cobham because of the trials and tribulations experienced on the outward journey.

When the formation of Moths appeared on the scene on Saturday an order went round that all candles (if any) must be hurriedly extinguished in case the well-known partiality of Moths for candles would prove too strong and cause the said Moths to omit the regulation circuit.

The Croydon publicity merchants were still hard at it with the booming of alleged "records." The Hampstead flew to Paris in 1 hr. 29 mins. on Wednesday of last week and of course a paragraph was circulated to the effect that this was another "record," and the usual wrong statements of what the record really stands at were broadcast. One cannot help thinking that it would pay Imperial Airways to employ a responsible official to distribute authentic statements of good deeds done by Air Union and K.L.M. also, as it would be all to the good of air travel.

The Argosy made its test flight at Coventry during the week piloted by Mr. F. L. Barnard. One is informed that although it is a three-engined machine it preferred to pretend that it was only twin-engined after the first few minutes.

Although the high winds of the past week made the outward journeys very quick the homeward ones were somewhat lengthy and on one day a W.8 took about eight hours to come from Cologne. It is an ill wind that blows nobody any good and Mr. Hewlett of Anglo-American petrol who supplies all the wants of the Goliaths so far as petrol is concerned enjoys that sort of weather as the said Goliaths have practically no petrol left in their tanks when they arrive from Paris against a head wind.

Over at A.D.C. Aircraft Ltd. Mr. Perry has been doing a number of tests and demonstrations with the Nimbus-D.H.9. On Wednesday Flt. Lt. Gray completed a Farnborough test on the Martinsyde-A.D.C.1 and on Saturday Mr. H. H. Perry was disporting himself on the Martinsyde for the benefit of the assembled multitude.—G. D.

A COBHAM REMINISCENCE.

Mr. Fred Holmes, of the Berkshire Aviation Tours, who was working with Mr. Alan Cobham in those early joy-ride days which Mr. Cobham describes so graphically in his excellent book "Skyways," sends the following reminiscence, which Mr. Cobham has evidently been too modest to include in his book, if he even remembers the incident:—

While flying at Nottingham some years ago, Mr. Cobham, surrounded by an admiring crowd after the day's work was done, started to disrobe from his flying kit. As he took off his helmet a small child was heard to remark:—"Oh, Mummy! He is only an *ordinary* man after all."

A MATTER OF KIT.

Among the numerous and varied questions the staff of THE AEROPLANE are called upon to deal with is to recommend a tailor who will make Service kit and plain clothes at a reasonable price. Mr. Arthur Ratcliffe, of Thos. A. W. Ratcliffe and Sons, 4, New London Street, E.C.4, has been in the R.A.F. himself and knows exactly the sort of thing the new Short Service Officer wants. And his prices are very reasonable indeed.

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DOPES AND VARNISHES

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For tautening, weather-proofing; also petrol and castor-oil proof.

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- DO NOT DETERIORATE IN STORE -

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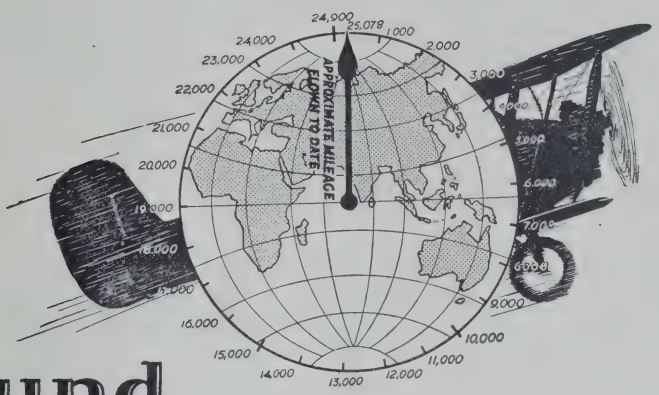
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TO test the endurance and reliability of the Bristol "Jupiter" Air-cooled Engine, a Bristol Bloodhound Biplane began, on January 4th, 1926, a series of endurance flights between Bristol and Croydon. The engine was sealed officially by the Aeronautical Inspection Directorate.

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In subjecting the reputation of their engine to this arduous test, it was vitally important for the Bristol Aeroplane Co. to choose an absolutely reliable petrol. The only petrol used for the entire test was Shell Aviation. And the unqualified success of the test proves that they chose well.

SHELL
AVIATION SPIRIT

S. 28

PERSONAL NOTICES.

MARRIAGES.

HOLT—DUGDALE.—The marriage took place on Mar. 9, at St. Peter's, Eaton Square, of Air Commodore Felton Vesey Holt, C.M.G., D.S.O., R.A.F., third son of the late Sir Vesey Holt, of Mount Muscal, Bexley, and of Lady Holt, of 67, Cadogan Place, to Miss Marion Edith Dugdale, only daughter of Mr. and Mrs. James Henry Dugdale, of Cadogan Gardens. The Rev. H. D. L. Vienier, Chaplain-in-Chief to the Air Force, was one of the officiating clergy.

A guard of honour was formed by representatives of the C.F.S., Upavon. The best man was Sq. Ldr. John Russell, D.S.O.

Among those present were:—The Lord Hugh Cecil, the Hon. Mrs. Boyle, Brig.-Gen. and the Hon. Mrs. Warner and Miss Warner, Air Vice-Marshal Sir Philip and Lady Game, Air Vice-Marshal Sir Geoffrey and Lady Salmond, Air Marshal Sir John and the Hon. Lady Salmond, Air Vice-Marshal and Mrs. Brooke-Popham, Sq. Ldr. B. E. Baker, Flt. Lt. E. P. Fletcher, Sq. Ldr. Vachell, Flt. Lt. J. Williams, Sq. Ldr. de Crespigny, Wing Cdr. A. Ap. Ellis, Group Capt. and Mrs. J. L. Forbes, Sq. Ldr. and Mrs. Gordon Dean, Wing Cdr. and Mrs. Spicer, Air Cdr. Longmore, Wing Cdr. and Mrs. Carmichael, Wing Cdr. and Mrs. Maycock, Wing Cdr. and Mrs. Pretyman, Wing Cdr. and Mrs. James, Group Capt. Bradley, Wing Cdr. and Mrs. Garrod, Group Capt. and Mrs. Bourke, Sq. Ldr. and Mrs. Brooke, Sq. Ldr. and Mrs. Gordon, Sq. Ldr. and Mrs. Sowery, Maj. and Mrs. Cooper, Col. and Mrs Vesey.

LUXMOORE—JOHNSTON.—On Mar. 11, at All Saints', Ascot, Fre Lagon, Flt. Lt., R.A.F., younger son of the late Mr. and Mrs. Edv Luxmoore, of Weybridge, to Dorothy Jane, daughter of the late J Johnston and of Mrs. Johnston, of Nether Denton, Cumberland.

FORTHCOMING MARRIAGE.

HILTON—MARTIN.—The engagement is announced between Lt. Edward Goodwin Hilton, D.F.C., A.F.C., R.A.F., son of the Mr. and Mrs. J. E. Hilton, of Lambourne, Berks, and Joyce Elizat younger daughter of Mr. and Mrs. Herbert J. Martin, Mason's Bri Hadleigh, Suffolk.

BIRTHS.

COOPER.—On Mar. 11, at Chester, to Doris, wife of Flg. Off. S Cooper, R.A.F.—a daughter.

LORAINE.—ON Mar. 6, at Birchfield, Rochampton Park, to Li Col. Robert and Winifred Loraine—a daughter.

ALMS AND COLLINS.—In the Personal Notices in the issues of AEROPLANE of Mar. 3 and Mar. 10, under the notices of the deaths Flg. Off. R. Collins and Flg. Off. L. W. H. Alms, it was incorre stated that these two officers were trained at No. 2 F.T.S. Net avon. Both of these officers were trained at No. 2 F.T.S., Duxford

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Operating at 2,700 r.p.m. and giving 10,850 sparks per minute—continuously and in regular sequence—throughout the 16,040 miles flight, B.T.H. magnetos have added another notable achievement to the long list of records which has made them

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THE AEROPLANE
INCORPORATING AERONAUTICAL ENGINEERING
Edited by C.G. Grey

Vol. XXX. No. 12. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

"ALITIBUS NOCTIS."

[Motto of 58 (Bombing) Squadron R.A.F.]



APR 7 1926

"WITH THE BIG BIRDS OF NIGHT":—A Vickers Virginia (Two Napier Lions) of No. 58 (Bombing) Squadron R.A.F., which is commanded by Sqdn. Leaders Arthur T. Harris, A.F.C. and Walter H. Longton, D.F.C., A.F.C. The Virginia is the standard long-range low-altitude heavy-weight night-flying bomber of the R.A.F. The machine is here seen taking off from Brooklands, with the Vickers (Weybridge) Works in the right background and the track and members' hill and paddock of the Brooklands Automobile Racing Club to the left of them.

SPANISH FLIGHT TO SOUTH AMERICA

Major Franco's Flight to South America, in which he carried a Marconi A.D.6 Wireless Set and Direction Finding Apparatus, has proved the value of direction finding equipment to an expedition of this kind, as the following reports show:

"The Direction Finder worked marvellously. I have received bearings at a distance of 700 kilometres."

"In approaching Las Palmas the airmen asked for constant signals from the wireless stations as visibility was bad, and they were greatly assisted by taking frequent bearings."

The results attained on this flight establish the direction finder as a necessary addition to the equipment of aircraft flying over long distances.

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THE pronounced need for a low powered practical training aeroplane has led to the production of the new AVRO "GOSPORT."

The AVRO "GOSPORT" is not a "light aeroplane" according to the present interpretation of the word, but it is undoubtedly the lowest powered practical training aeroplane yet constructed.

This machine has many special flying and constructional characteristics and some of these will be dealt with in future advertisements.

The name "AVRO" has always been the hall-mark of the best training machine in the world. The word "GOSPORT" is associated with the most scientific system of training ever devised. This system was operated from the outset by an earlier type of AVRO aeroplane and it is fitting that this, the latest and most perfect training aeroplane in the world, should be named the AVRO "GOSPORT."

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MAR. 24, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 12.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home, 3 months, 8s.; 6 months, 16s.; 12 months, 32s. Foreign, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 38. U.S.A., 1 Year, $8 50c.

ON PROPAGANDA AND ENGINEERING.

On March 17 Mr. Alan Cobham, Mr. A. B. Elliott and Mr. W. G. Emmott were entertained by the Royal Aero Club the Savoy Hotel in honour of their flight to the Cape and ck. Considered as an entertainment it was very like other ero Club functions of a similar nature, minus the cheerful ement habitually provided on these occasions by Sir Sefton ancker, who is at present performing aero-ambassadorial ats in the United States. There was the usual curious glomeration of people who matter and of Modocks who do ot. There were the usual speeches, which, though fewer number than on some occasions, occupied if anything a ifle more time.

What made the occasion notable were Mr. Cobham's re- arks on aviation propaganda and Mr. J. D. Siddeley's re- arks on aeronautical engineering. With these two sub- cts one proposes to deal after one has reported what appears be essential in the rest of the proceedings.

The other outstanding feature of the evening was the an- uncement by Sir Philip Sassoon that His Majesty the King id been graciously pleased to confer the Air Force Cross Mr. Cobham. The official notification of the award will found elsewhere.

There were those present who rather expected that Mr. obham would be awarded a K.B.E., following the precedent Sir John Alcock and Sir Arthur Whitten Brown for the st non-stop trans-Atlantic flight, Sir Ross Smith and Sir eith Smith for the first flight to Australia, and Sir Helperus an Ryneveld and Sir Quentin Brand for the first flight to e Cape. But it is necessary to remember that those knight- oods were given for pioneer flights each of which marked e first aerial communication between salient points of the ritish Empire. Mr. Cobham's A.F.C. was given for all- und excellence of performance, much in the same way that e A.F.C. was conferred on Wing Cdr. Goble and Flt. Lt. cIntyre for their wonderful flight round Australia.

The Speeches.

His Grace the Duke of Sutherland, Chairman of the Royal Aero ub, proposing the toast of the South African flight, paid well- served tributes to Mr. Cobham and to Mr. A. B. Elliott, his mpanion in so many adventures, and Mr. B. W. G. Emmott, the umont Company's cinema operator, who accompanied him. His race said that Mr. Cobham had proved himself to be one of our eatest airmen and that the flight was valuable propaganda for itish Aviation, for all South Africans were interested in it, and me of them were millionaires. He also reminded us that the cost the flight had been shouldered entirely by private enterprise without rect assistance from the Air Ministry.

Referring to the flight back to England His Grace reminded us that e party left Cape Town simultaneously with the Union Castle liner *indsor Castle* and said that he understood that large sums of money anged hands on the previous Saturday evening in South Africa when was made known that the aeroplane had won the race by two days.

Sir Philip Sassoon, Under-Secretary of State for Air, after announc- g the award of the Air Force Cross to Mr. Cobham, said that his ploit might mean the turning point in the development of the rcraft Industry, and could not fail to raise the credit of British ing throughout the World. But he thought that the future of com- mication between this country and the Cape would be by airship.

Mr. T. O. M. Sopwith, Chairman of the Society of British Aircraft Constructors, coupled the welcome of the S.B.A.C. with that of the Royal Aero Club and the Air Ministry. He said that he had con- sulted the most elaborate dictionaries known to cross-word scientists but had failed to find a phrase which described adequately the work of Mr. Cobham. His flight to Burma and back would never be eclipsed, but the South African flight was in some ways a bigger success.

Mr. Sopwith said that one point about it was particularly wonderful. He asked us to remember that while flying through that sandstorm Mr. Cobham had lost his way for as much as three minutes, and that during that period quantities of sand must have been sucked through that wretched engine. It was wonderful to think that the engine had run for a period on a mixture of sand and oil, which everyone knew made a first-class grinding compound. Regardless of that Mr. Cobham had started to fly over the Mediterranean, five hundred miles of open sea, a journey which any first-class aviator would be justified in turning down, even with a brand new engine straight out of the workshop.

Mr. Cobham, in returning thanks, said that he had wanted to make this flight for years but the difficulty had been finance. Consequently he became a professional beggar and "told the tale" so often that he ended by believing it himself. Altogther he enlisted the sympathy of twenty-one companies to come into the scheme.

Apart from those who gave aid in money or material he expressed his sincere thanks to all the officers and men of the R.A.F., especially in Egypt, who had done so much to help him. Everyone of them had done his very best to make the flight a success.

Paying a well-deserved tribute to Mr. Elliott he said that he had taken him with him because he could be relied upon. There were perhaps cleverer mechanics, some of them too clever, but Mr. Elliott was absolutely reliable. He never needed checking up. Wherever they were, he went through all the schedule of inspecting his engine, and machine as calmly as if he were on the aerodrome at Stag Lane. He proposed to take him with him on his next stunt if he would come.

Mr. Cobham expressed his satisfaction with the behaviour of the D.H.50. And he said that the Jaguar engine had never given him a moment's anxiety while in the air

Turning to the possibilities of air lines Mr. Cobham said that we must do something in the Eastern Mediterranean. If we did not, other countries would do the job.

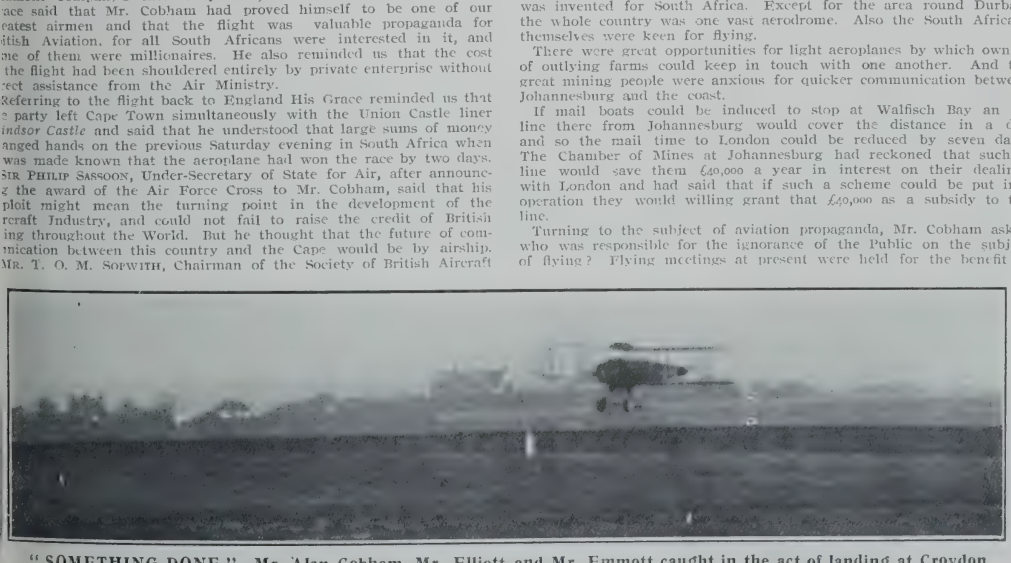
There were great opportunities for an air line between Central Africa and Cairo in spite of all they had heard about the conditions there and the dreaded "sudd" country and tropical rains. Any of the Imperial Airway's pilots would regard flying along such a line as merely a rest cure. Central Africa also wanted photographic surveys, especially in Kenya and Tanganyika.

As for South Africa, the country was invented for flying, or flying was invented for South Africa. Except for the area round Durban, the whole country was one vast aerodrome. Also the South Africans themselves were keen for flying.

There were great opportunities for light aeroplanes by which owners of outlying farms could keep in touch with one another. And the great mining people were anxious for quicker communication between Johannesburg and the coast.

If mail boats could be induced to stop at Walfisch Bay an air line there from Johannesburg would cover the distance in a day and so the mail time to London could be reduced by seven days. The Chamber of Mines at Johannesburg had reckoned that such a line would save them £40,000 a year in interest on their dealings with London and had said that if such a scheme could be put into operation they would willing grant that £40,000 as a subsidy to the line.

Turning to the subject of aviation propaganda, Mr. Cobham asked who was responsible for the ignorance of the Public on the subject of flying? Flying meetings at present were held for the benefit of



"SOMETHING DONE."—Mr. Alan Cobham, Mr. Elliott and Mr. Emmott caught in the act of landing at Croydon aerodrome on completion of the flight to Cape Town and back on the de Havilland 50J.

those who knew all about it. They ought to be held for the benefit of the Public.

He said that the Press and the Public were like children where Aviation was concerned, but they would eat out of a spoon if their aviation information was given to them in a proper manner.

Captain Geoffrey de Havilland, replying to the toast as one of the accessories to the fact, said that ninety per cent. of the credit for the flight ever having happened at all was due to Mr. Cobham. He kept everybody up to the scratch and interviewed all the people who supported the scheme. All the de Havilland firm had to do was to get the machine ready. Mr. Cobham and Mr. Elliott did the rest.

The machine was built originally in 1923 with a Puma engine and it had covered altogether about 80,000 miles, including the flight to Burma and back and the Continental tours. He said that people built civil aircraft, not because such machines were a commercial proposition, but because they believed in aviation.

Mr. J. D. Siddeley, of Armstrong-Whitworth Aircraft Ltd. and Armstrong-Siddeley Motors Ltd., also replying to the toast, said that Mr. Cobham was our greatest airman adventurer, worthy to rank with the adventurers of past ages.

Referring to the development of modern aircraft, Mr. Siddeley said that Aircraft Engineering had been built up under the fostering care of the Air Ministry. His own firm's development of the air-cooled engine had begun by their being instructed in the manufacture of such engines by Colonel Mervyn O'Gorman.

He referred in a sportsmanlike way to the good work done by other British engines recently, pointing out that Napiers had flown the South Atlantic and that a Bristol engine had covered a great distance in a test flight. He added that aero engines were now so developed that they cost only a few pence in replacements per hundred hours' flying.

He appealed to the members of the Press who were present for their help in seeing that the Aircraft Industry with its valuable technical equipment was not allowed to suffer by the prevailing cry for economy.

Mr. Handley Page, in proposing the health of the Chairman, the Duke of Sutherland, said that we were very fortunate in those who were at the head of aviation. We only had to look at the top table for examples. Referring to Sir Philip Sassoon's belief that communication with the Cape would be maintained by airships he said that he imagined that such a belief was due to the natural propensity of the politician to turn to the gasbag.

And so the proceedings ended in a proper spirit of levity, after a good deal of somewhat heavy going. After which cheers were given for Mr. Cobham and Mrs. Cobham and Mr. Elliott and Mr. Emmott, and the party dispersed.

Tact may on occasion be carried to extremes, though perhaps forgetfulness rather than tact was responsible for the fact that none of the speakers even mentioned that the first flight from London to the Cape was made by Lieut.-Col. Helperus Van Ryneveld and Sq. Ldr. Quentin Brand, who, as already mentioned, were made Ks.B.E. as pioneers of the route.

Sir Quentin Brand was actually in the room at the time, sitting at a table which included certain other pioneers and record-breakers, namely Major Brackley, who can certainly claim to have flown a four-engined aeroplane on a longer non-stop flight than anybody else, let alone his flying boat trips round Japan, and Major C. C. Turner, who one believes is still a shareholder in the World's distance record for balloons, made by the crew which drifted from London to Warsaw, and Captain Tymms, our leading authority on air navigation.

The Propaganda Question.

That being that, we may now consider Mr. Cobham's remarks on the subject of propaganda. On this subject Mr. Cobham is as sound as he is on the subject of handling an aeroplane and finding his way across country, mapped or unmapped.

He asked, "Who is responsible for the ignorance of the Public?" The answer is, quite briefly, primarily the Royal Aero Club and the Air League and the editors of the leading British newspapers, and secondarily the Air Ministry, and the Royal Aeronautical Society..

The Aero Club's first reason for existing is to promote and govern the sport of flying. The Committee may if they wish regard themselves as being merely the governing body of the sport of flying and may adopt the attitude that their job begins and ends with seeing that the sport of flying is kept clean and straight. They may argue justifiably that the promotion of flying meetings is not their job. But if that be their attitude the best thing the Club can do is to say so plainly and leave somebody else to promote flying meetings.

Sport-Promoting.

So far we have only had two men in this country who really understood the art of educating the Public to appreciate flying. They were the late Richard T. Gates and the very much alive Mr. Bernard Isaac. Richard Gates was the driving force which built up the aerodrome at Hendon and made it a regular holiday resort for the Great British Public before the War. His Bank Holiday meetings drew crowds which would be a credit to a football cup tie, and his ordinary week-end meetings on Saturdays and Sundays were far better attended than anything we have ever seen in connection with aviation since the Armistice in 1918. The crowd which went to welcome Mr. Cobham at Croydon would not have filled one of the enclosures on a Sunday at Hendon in the time of Richard Gates.

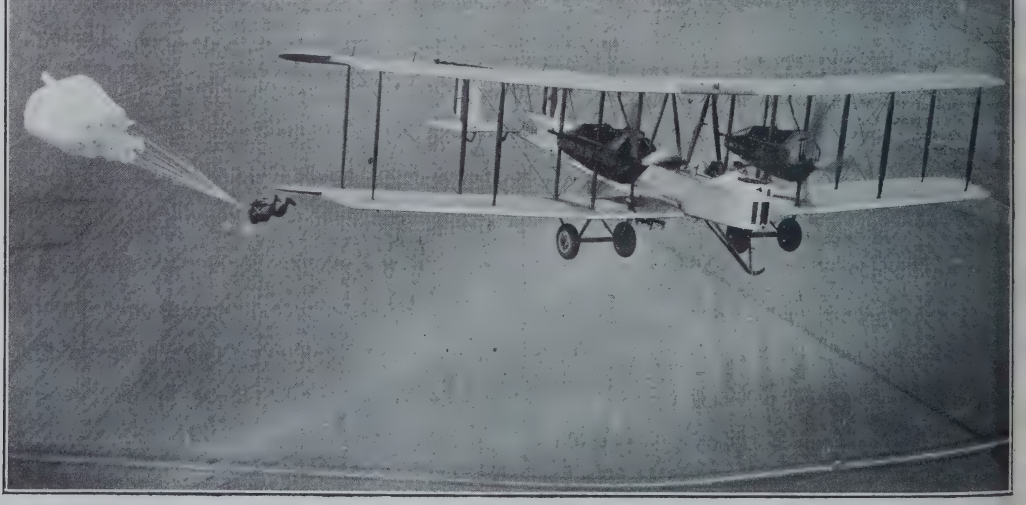
As his lieutenant Mr. Bernard Isaac developed the spoon-feeding of the Press and the Public to a fine art. He got just near enough to the present day newspaper attitude of mind to appeal to the editors of the papers without reducing aviation to the level of a mere stunt. He popularised aviation without vulgarising it.

His displayed advertisements and posters always caught the eye. His leaflets and pamphlets rivetted the attention not only of the mere ignorant Public but those who were really on the inside of aviation. He had the knack of appealing not only to those who knew but to those who wanted to know and those who did not know but ought to know. And that is the kind of propaganda that we want to-day to educate the public and make them air-minded.

The meetings promoted by the Royal Aero Club since the Armistice have just been little family affairs. They have been about as much like one of the great Gates-cum-Isaacs meetings at Hendon as the R.A.F. Point-to-Point was like the Grand National. They have been quite enjoyable for those who are inside aviation. But from the point of view of promoting the sport of flying they have been simply puerile.

Feeding the Public.

As Mr. Cobham said, the Press and the Public are like children. They will eat out of a spoon if aviation is fed to them in a proper manner. The editors and sub-editors of the newspapers are not hostile to aviation. So far as their limited intelligences go they are even friendly towards it



A PULL-OFF.—A pupil of the R.A.F. Parachute School being pulled-off a Vickers Vimy at Henlow.

Napier engines on top!

"To-day the Napier aero engine is the best and the leading aviation motor of the world, with the motto of the Royal Marines, '*Per mare, per terram,*' as its slogan of efficiency for aeroplanes that traverse land and sea, alighting with equal success on either. But that, after all, is the pilot's job. The engine has to be his shield in its never-failing regularity of performance. To-day, some huge total of flying mileage has been effected all over the world, and, according to the latest available statistics, Napier engines come out on top for mileage flown with minimum of trouble. The Napier Lion aero engine is indeed well named, as it truly impersonates this heraldic symbol of Great Britain."

Sketch, 3.2.26

The Napier 'Lion" aero engine was used by Major Franco on his wonderful flight from Spain to South America when he covered 6,259 miles in 60 flying hours.

NAPIER

The Finest Aero Engine in the World

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ACTON, LONDON, W. 3.

The Press will publish almost anything about flying if it contains what Fleet Street regards as a story.

Unfortunately, owing chiefly to lack of education, newspaper editors and sub-editors, with the exception of the editors-in-chief of the great dailies, who have no time to spare for the mere sport of flying, have not yet grasped the fact that the Great British Public will absorb voraciously the best of everything or the worst of everything, but will not be content with the merely clever or mediocre. A seaside crowd will applaud a first-class orchestra playing the best of Wagner and it will applaud equally the latest vulgar American song. Similarly, if the Public are properly told about it beforehand they will appreciate really good air racing or they will turn out in thousands to see exhibition parachuting or dangerous stunting.

The vast crowds which fight their way to and from Hendon every year to see the R.A.F. Pageant prove that the Public wants to see good flying. And because the people who run the Pageant (perhaps one should call it the Display, though the word Pageant describes it so much better) have faith in their work, and because they are enthusiastic for their Service, to them is given the ability to attract public attention. And it was because Richard Gates and Bernard Isaac had faith in Aviation that they also were given that same ability.

Because the Aero Club people are only playing with flying and do not regard the Gospel of Aviation as the be-all and end-all of their existence they are denied that gift. And because the newspaper people in their heathen blindness also do not understand, they also do not preach the Gospel of Aviation as it should be preached. But because Mr. Cobham, whatever may be his faults in the eyes of some hypercritical people, is filled with the true spirit of the apostle, and has absolute faith in his mission, he is able to capture the imagination of the people of this country.

The Apostolic Spirit seems to have descended upon those who are running the mis-called light aeroplane clubs in various parts of the country. They, and the Joy-ride firms, are the people who are really popularising aviation to-day and are teaching our people to become air-minded.

The Air League has failed lamentably in the past to fulfil its ordained task as the body in charge of air propaganda, but it is awakening, and may do good work in the future. So one will refrain from saying more than that it has missed great opportunities.

Air Propaganda is not specifically a part of the Air Ministry's job, but in its own interests it might have done much more than it has done. The R.A.F. Pageant is pure propaganda, and it proves what can be done by "showing the flag."—Much more of that kind of thing is needed, albeit on a smaller scale, all over the country, and the Empire,

The Royal Aeronautical Society, being composed chiefly of dry-as-dust scientists who are not really scientists at all, cannot be expected to advertise Aviation. But it ought to help to educate.

We do need badly some one man of really high standing and social influence, and, if possible, wealth, to come forward as the leader of aviation, and to do for the propagandist side of aviation what the late Robert Yerburgh did for the Navy League. Also we want somebody who combines the spirit of the apostle with the spirit of the showman to do for the sport of flying what was done by Richard Gates.

There is an axiom to the effect that the time finds the man. There is no sign of a man at present, so presumably the time is not yet ripe, but there are vast opportunities now for the man if he will discover himself.

The Engineering Question.

Now we may turn to Mr. Siddeley's somewhat startling remark that Aircraft Engineering has been built up under the fostering care of the Air Ministry. As Mr. Siddeley volunteered the further information that his firm received their first lessons in the building of air-cooled engines from Colonel O'Gorman, one may fairly assume that by the phrase Air Ministry Mr. Siddeley implied that the Royal Aircraft Factory, known now as the Royal Aircraft Establishment, at Farnborough, is included in the category of those who exercised their fostering care over the Aircraft Industry, for Colonel O'Gorman was Superintendent of the Royal Aircraft Factory and ceased to be the Superintendent when the Air Ministry and the Royal Air Force came into being and the letters R.A.F., which at one time stood for everything that was bad in the estimation of the Aircraft Industry, with very few exceptions, came to indicate the combination of naval and military flying services which is now our First Line of Defence.

The Education of the Experts.

As one happens to have been associated with flying since its very beginning, before there was an Aircraft Industry at all, and as one happens to have been closely in touch with the Aircraft Industry from its very beginning, long before Mr. Siddeley's business instincts inspired him to take a hand in the commercial manufacture of aircraft, one takes the liberty of directly controverting Mr. Siddeley's statemen So far from aircraft engineering having been built up und the fostering care of the Air Ministry, the fact is that a craft engineering, so far as it has progressed, has develop in spite of the interference of the Air Ministry and of t Royal Aircraft Factory, the latter establishment having ex cised before the existence of the Air Ministry precisely t same hampering influence that the Air Ministry's expe have exercised ever since they imposed themselves on a lon suffering Trade.

If Mr. Siddeley had said that the Air Ministry had be the step-mother of the Trade one would have agreed wi him cordially, but certainly the Air Ministry has not been kindly foster-mother.

Moreover, in so far as people at the Air Ministry kn anything at all about aircraft engineering, most of the Government employees who have that little knowledge (whi in their cases is often such a dangerous thing) have be taught what they know by the Aircraft Industry. Or, they have not actually been taught, they have acquired th knowledge at the expense of the Aircraft Industry, seei that the Industry existed long before most of them beca "technical officers," and so escaped serving in the trench during the War 1914-18.

Step-Mothering The Industry.

In the very earliest days of military aviation those at t War Office and at Farnborough who were responsible for t existence of the Royal Aircraft Factory did their best make it into a Government dockyard at which the ae planes of the Royal Flying Corps should be constructe its efforts to build aeroplanes drew upon it the derision all practical aeroplane makers,—little as the aircraft mak themselves knew about aerodynamics, and although f of them were engineers and aircraft engineering as such d not exist.

The early issues of The Aeroplane contain descriptio and sketches of machines designed and built at the Ro Aircraft Factory which can scarcely be bettered as engine ing burlesques among the emanations from the brain of M Heath Robinson.

Later when the design and construction of aircraft beg to approximate to regular engineering and the Aircraft I dustry began to take a definite form, the officials of the Ro Aircraft Factory did their utmost to acquire complete cont of the Industry by appointing themselves the official judg as to whether designs were nt to be produced and whet construction was fit to be used.

Firms which kicked against this official interference we practically black-listed and only those firms which took t oppression of the Factory humbly and without objection we able to get their products passed without difficulty. In t Aircraft Trade, as in all other trades which depend Government orders, there have always been some firms whi seemed to think that the best road to commercial success by crawling up the back stairs of Government offices.

But then, as now, those firms who were certain their positions and who had faith in the excellence of th products found that the surest way to success was by fig ing Government interference and demonstrating public that their products were better than those of their co petitors. Consequently in the interest of our military av tors the Government was forced to buy their products spite of the condemnation and the intrigues and the slande of the Government experts.

The old original Avro biplane with the 50 h.p. Gnome e gine was damned by Government experts and crabbed them in every possible way, and was finally bought throu the influence of the practical aviators of the R.F.C. (pron nent among whom one remembers was a certain Capta H. R. M. Brooke-Popham) in exactly the same way th the Fairey Fox was first of all damned and finally boug during the past year.

Then, when the War came, the Royal Aircraft Facto tried to induce the War Office to standardise its B.E. planes and abolish entirely all initiative in the Aircraft I dustry. It so nearly succeeded that some hundreds of o aviators were shot down by the superior German Fokk monoplanes before the War Office was induced to send their rescue new squadrons of the R.F.C., and squadro borrowed from the Royal Naval Air Service, mounted machines built by independent firms, such as the Sopwi Company, which had been kept alive by the Air Departme of the Admiralty under Captain Murray Sueter, R.N.

Those things, of course, happened in the days before M J. D. Siddeley took an active part in aviation so of cou he cannot be expected to know them. But he certain should recognise the fact that during his own connecti with Aviation the Air Ministry experts have certainly n fostered aircraft engineering, at any rate so as you wou notice, to use the American phrase. Certain firms w doubtedly have been in favour among Air Ministry exper but in the main these have been the firms who were p


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pared to take their afflictions lying down and who did not presume to argue with the experts but did as they were told and "spoke words pleasing unto the King," as it were.

In some cases firms may actually have been helped by the knowledge which has been accumulated by the Air Ministry experts from the Trade, seeing that the said experts have had access to the innermost secrets of every firm, whereas each individual firm has only its own intelligence on which to draw. There have been cases in which when an independent firm has produced something quite startling in the way of design, the Air Ministry experts have done their utmost to help a tamer firm to beat it. But almost invariably the free and independent designer has come out on top simply because of the proven incompetence of the official experts.

Certain of the technical departments of the Air Ministry have undoubtedly been of high value. The Stress Department, for example, has forced the less competent firms to maintain the strength of their structures. And but for them we might have had a good many more aeroplanes breaking in the air than we have had. And the Aeronautical Inspection Department has forced us to maintain a high standard of material and workmanship. But that particular form of control can scarcely be called fostering engineering. It is rather raising obstacles to be overcome than pushing constructors over obstacles, which is what fostering should do.

The genuine fostering that the Air Ministry has done has been in laying down the general principle that firms which have proved their ability to produce good aircraft and engines must be kept alive by giving them sufficient orders to maintain their technical staffs and the pick of their workpeople.

Also, the Air Council, as such, has on occasion insisted on buying certain aircraft and engines and other equipment in direct defiance of its own experts. But that is fostering the Trade rather than fostering engineering.

Matters of Opinion.

So far as back March 7, 1924, after one had published an article in The Aeroplane "On Improving the Breed," suggesting that the importation by Mr. Fairey of new ideas from America based on the Curtiss speed machines, might improve the breed of British aircraft, which inferentially meant improving British aircraft engineering, Mr. Siddeley wrote protesting "That that sort of article" could not "help the British manufacturer to sell his goods abroad in strenuous competition with other nations."

After all, the proof of the pudding is in the eating and the standard of performance which has been set up by Mr. Fairey's products based on that American importation has distinctly raised the standard of British aircraft engineering. By his success other firms have been spurred to try and beat him. And to-day many machines are being built quite free from the trammels of Air Ministry experts and look like getting foreign trade.

At a considerably later date one took upon oneself to remark that all aircraft engineering was amateurish compared with the exact science to which other branches of engineering have attained. This statement drew upon one an attack in a contemporary publication,—albeit the attack was designed to fasten upon the British Aircraft Industry a criticism which was made in a general way on aircraft engineering all the World over. With that attack Mr. Siddeley expressed his agreement, in a letter dated April 16, 1925. Therefore it may be seen that Mr. Siddeley's opinions on engineering do not happen to coincide with one's own.

Undoubtedly Mr. Siddeley's views are entitled to every respect. He is certainly a good judge of a finished engineering product, as will be recognised by those who have been acquainted with the excellence of the Siddeley, and the Siddeley-Deasy and the Wolseley-Siddeley motor-cars which have been produced under his management. But Mr. Siddeley's earlier experience was more on the commercial side than on the engineering side of the trades in which he has been so successful. When one first met him he was on the commercial side of the Rover Cycle Company's business in Coventry, being oneself at that time a draughtsman (and a very bad one) with the Swift Company, also in Coventry.

Therefore while one has a vast respect for his opinions as a business man and has an immense admiration for the way in which he has built for himself a prominent position in the commerce of this country one is by no means prepared to accept his dictum that our aircraft engineering has been built up under the fostering care of the Air Ministry.

Our Future.

Taking the two expressions of opinion of Mr. Cobham and Mr. Siddeley together, undoubtedly our great needs in this country to place us in the position of the greatest Air Power in the World are very much better propaganda and a greater knowledge of aircraft engineering.

The recent awakening of the Air League gives one hope that the propagandist side of aviation will receive adequate attention in the near future. And the Air Ministry's "showing the flag" scheme for the R.A.F. are full of possibilities.

So far as aircraft engineering is concerned we should make very much greater progress if, as has been suggested by various competent engineers in the Aircraft Industry, a much greater proportion of our experimental and research work were delegated to the aircraft firms themselves instead of concentrating it in the hands of a comparatively small number of official experts whose intelligence and experience are both small. Given a free hand and real fostering care by the Air Ministry our aircraft designers, especially the new generation which is rising from among the younger men in the design departments to-day, would very soon put aircraft engineering on a level with the great engineering industries of this country.

We are essentially an engineering people, expert workers in wood and metal. We have the brains and the money in the country if both are properly used. If our people are taught to be air-minded and if our young engineers are encouraged to produce their new ideas we shall soon hold that position in the air which we held at sea until sea power ceased to be a sure defence.—C. G. G.

AN ALDWYCH LUNCH.

On March 19 Mr. and Mrs. Cobham, Mr. Elliott and Mr. Emmott were entertained to lunch at the Connaught Room by some hundreds of members of the Aldwych Club. Sir Charles Wakefield presided, supported by Lord Dewar, Lord Waring, Lieut.-Col. Moore-Brabazon, Mr. J. D. Siddeley, Sir Samuel Instone, Air Vice-Marshal Sir Vyell Vyvyan (as Director of Imperial Airways) and Mr. T. O. M. Sopwith, besides sundry others concerned with aviation, as Modocks otherwise.

Mr. Cobham was presented with a silver mug as a memento of the occasion, this particular type of mug being a mark of honour which is only conferred by the Club on particularly distinguished guests. Having oneself lived by, with or from advertisements for the past twenty years one can perhaps say without offence to our remarkably hospitable hosts that as the Aldwych Club is composed entirely of advertisers and advertising agents, a cynic might think that the function was the members, and of most of the guests, of the Club was to catch mugs rather than to give them away.

Sir Charles Wakefield proposed Mr. Cobham's health in a moving speech in the course of which he said,

"It sometimes seems that we live among clouds of futility and triviality, and then suddenly comes some stirring feat of bravery and endurance to remind us that the age of heroism is still with us." Then turning entirely practical Sir Charles said that the great need of aviation now was to find and develop practicable services. British aviation must come to grips with practical problems,—skill and courage were useless if we could not to-day find employment for it. We must have aerial mastery and to have that we must be foremost in the practical use of aviation. From that point of view Mr. Cobham's flight was deserving of all praise. Mr. Cobham had helped to lay the foundations of what would one day be a network of air services throughout the British Empire.

One agrees most cordially with these sentiments. Mr. Cobham is entirely a self-made man. He can hardly ever have missed an opportunity in life. He is extremely quick in the up-take and his opinions on everything concerned with aviation are most intelligent.

Mr. Cobham in replying made light of his work. He said that as long as people thought that a man was a brave person to fly aviation was not going to succeed. He said that he had been driving a car about London lately and found it much more fatiguing than flying. If there were danger in flying it was not commercial.

He said that it was not till they reached South Africa that they realised the popular appeal the flight had made. There it turned out to be real British propaganda. The British people in South Africa only needed to see some flying to induce them to develop aviation.

One of the lessons he had learned during his flights was that there had been a lack of propaganda for British aviation throughout the Empire.

The health of the Chairman was proposed by Lord Dewar, who remarked that there were two kinds of husbands, those who say where they had been and those who did not. Mr. Cobham let everybody know where he had been, and he, Lord Dewar, had looked in his paper every morning to see how the flight was progressing.

JUST REWARD.

Mr. Alan J. Cobham has been awarded the Gold medal of the Royal Aero Club for his work in connection with British Aviation.

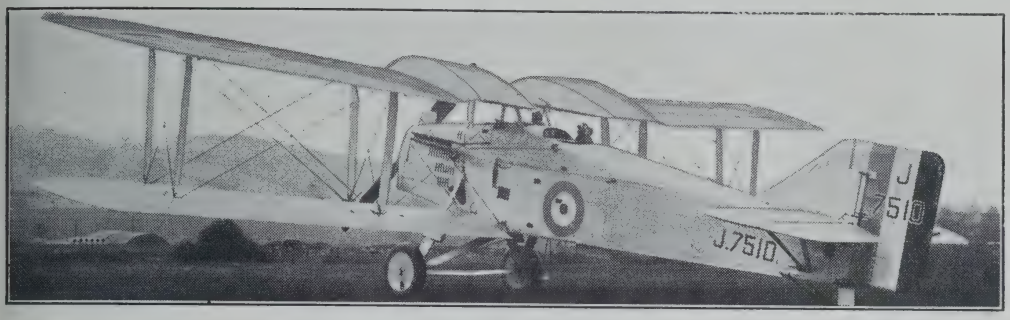
Mr. A. B. Elliott has been awarded the Bronze medal of the Royal Aero Club for his work in connection with Aviation.

[Though Mr. Cobham may hardly notice his award among his many scalps, recognition of Mr. Elliott's fine work has been long overdue.]

MR. COBHAM'S LECTURE TOUR.

Mr. Alan J. Cobham will give a lecture on his recent flight to the Cape and back on Friday next at 8.30 p.m. at the Æolian Hall, New Bond Street. Lantern slides made from photographs taken on the flight will be shown. Sir Charles Wakefield will be in the chair.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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THE ROYAL AIR FORCE.

The London Gazette

Mar. 16.

GENERAL DUTIES BRANCH.—The following Flt. Offs. are promoted to the rank of Flg. Offs.:—J. F. Young (Dec. 15, 1925); D. A. Boyle (Jan. 31); L. S. Birt (Feb. 15).

Flt. Lt. S. E. Adams is placed on the retired list on account of ill-health and is granted permission to retain the rank of Sq. Ldr. (Mar. 17); Obs. Off. W. J. Harris is placed on the retired list (Mar. 14); Flt. Lt. J. H. Rentham is transferred to the Reserve, Class A (Mar. 14); Flg. Off. R. F. de R. Read relinquishes his S.S. comn. on account of ill-health (Mar. 17).

STORES BRANCH.—The following Flt. Offs. on probation are confirmed in rank (Feb. 10):—P. S. Rickard, L. Taylor, J. E. Welman.

MEDICAL BRANCH.—G. S. Strachan, M.B., is granted a S.S. comn. as Flg. Off., for three years on the active list, with effect from and with seniority of Mar. 1; Group Capt. N. J. Roche, O.B.E., is placed on the retired list at his own request (from half-pay). (Mar. 1).

RESERVE OF AIR FORCE OFFICERS.—C. V. Hicks is granted a comn. in Class A, General Duties Branch, as a Flt. Off. on probation (Mar. 16). The following are confirmed in rank:—Flg. Off. F. W. Marshall (Mar. 8); Flt. Off. A. B. Roche (Feb. 4). Flg. Off. E. Bradley is transferred from Class A to Class C (Mar. 3); the comn. of Flt. Off. on probation W. J. Overy is terminated on cessation of duty (Feb. 26).

Appointments.

Week ending Mar. 22.

GENERAL DUTIES BRANCH.—Wing Commander V. Gaskell-Blackburn, D.S.C., A.F.C., to No. 9 Sqdn., Manston, to command, 28/2.

Squadron Leader H. H. MacL. Fraser, to Aircraft Park, India, 5/2

Flight Lieutenant R. Grice, D.F.C., to No. 1 F.T.S., Netheravon, 22/3.

Flying Officers A. T. K. Shipwright, D.F.C., to Armament and Gunnery School, Eastchurch, 16/3. C. H. A. Stevens, to No. 6 Sqdn., Iraq, 7/2.

Pilot Officers W. I. N. Strong, to No. 5 F.T.S., Sealand, on appointment to a Perm. Comn. (on probation), 13/3. The undermentioned Plt. Offs. are all posted to No. 5 F.T.S., Sealand, on appointment to S.S. Comns. (on probation), with effect 13/3:—G. E. W. Bankes-Williams, P. A. Barnett, B. J. Bushe-Caryesford, G. Carleton, J. Constable-Roberts, J. W. Duggan, I. J. Fitch, R. S. Fleming, E. C. Foreman, J. H. Harris, H. P. Hudson, R. J. Legg, A. A. Leslie, N. McLeod, R. R. Nash, R. G. Pace, E. J. Pentland, N. C. Pleasance, N. C. R. Roberts, G. H. Shaw, S. R. Sherman, M. A. Smyth, L. R. Stokes, G. A. V. Tyson, E. F. Wain.

MEDICAL BRANCH.—Wing Commander J. MacGregor, M.C., M.D., to H.Q., Iraq, for duty as Principal Medical Officer, 5/3.

Flight Lieutenants P. C. Livingstone, B.A., F.R.C.S. (E.), D.P.H., D.O.M. and S., to Research Laboratory and M.O.S. of I., Hampstead, 18/3. C. P. Barber, to Station Commandant, Basrah, 31/1. Flight Lieutenant (Q.Mstr. Medical) J. M. Maxwell, to Basrah Combined Hospital, 5/3.

Flying Officers C. J. MacQuillan, M.B., B.A., to Station Commandant, Basrah, 6/2. L. C. Palmer-Jones, M.B., to H.Q., Iraq, 5/3. G. M. Anderson, M.B., to No. 5 F.T.S., Sealand, 14/3.

STORES BRANCH.—Wing Commander F. H. Kirby, V.C., O.B.E., D.C.M., to No. 4 Stores Depot, Ruislip, to command, 16/3. Flying Officer V. B. Ranford, to R.A.F. Training Base, Leuchars, 22/3.

ACCOUNTANT BRANCH.—Flying Officer J. J. T. Rose, to H.Q., Egypt, 1/3.

The Gordon Shephard Memorial.

The Gordon Shephard Memorial Prizes, which are given annually for the best essays submitted by members of the R.A.F. on subjects selected by the Air Council, have been awarded as follows in the 1925 competition:—

First Prize—Flt. Lt. V. H. Tait, Directorate of Organisation and Staff Duties (Signals Branch), Air Ministry.

Second Prize—Sq. Ldr. F. J. Linnell, O.B.E., H.Q., Air Defences of Great Britain

Third Prize—Sq. Ldr. L. L. MacLean, *p.s.a.*, Directorate of Organisation and Staff Duties, Air Ministry.

The competition was established as a memorial to the late Brigadier-General G. S. Shephard, D.S.O., M.C., Royal Air Force.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. Expedition, under Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., which left Cairo on Mar. 1 to fly to the Cape and back left Kisumu (Kenya Colony) on Mar. and arrived at Tabora *via* Mwanza on the same day.

At Tabora they carried out Army Co-operation exercis with the 2nd Battalion, The King's African Rifles.

The expedition left Tabora on Mar. 21 and arrived Ndola (about 100 miles north of Broken Hill) at noon Mar. 22.

No. 55 Squadron Dinner.

The Annual Dinner of the 55 Squadron Association w be held at the Royal Adelaide Gallery Restaurant, Ki William Street, on March 27 (Boat-Race night) at 7.30 S o'clock.

Full particulars may be obtained from the Secretary, S Ldr. C. H. Nicholas, D.F.C., A.F.C., R.A.F., Staff Colleg Andover.

The Third Annual R.A.F. (India) Reunion Dinner.

The annual R.A.F. (India) Reunion Dinner for Officers who ha served with the R.A.F. in India will be held this year at the Sav Hotel at 7.30 p.m. (for 8 p.m.) on Mar. 27 (the day of the R.A v. Army Rugby football match at Twickenham). Tickets 16s. (exclusive of wines). Evening dress and miniatures to be worn.

It is requested that applications for tickets be made as early possible, accompanied by remittances, to Flt. Lt. C. A. Ellio R.A.F. Station, S. Farnborough, Hants, from whom full details c be obtained.

The 28th Squadron (R.A.F.) Old Boys' Association.

A Social Evening of the 28th Sqdn. Old Boys' Association will held at Slaters' Restaurant, 34, High Holborn (adjoining Chanc Lane Tube Station) on Apr. 10, at 7 o'clock. Members and th friends are invited. Tickets, 3s. single and 5s. 6d. double, may obtained from the Hon. Secretary, 102, Camden Street, N.W.1.

Boxing.

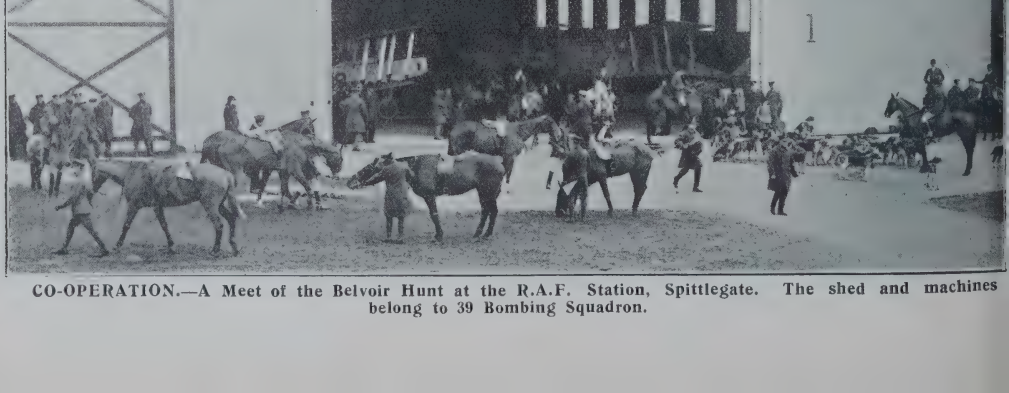
It is officially announced that the Inter-Service Boxi tournament, known as the I.S.B.A. Championship, which h taken place annually since the war, will not be held th year. In this tournament the best teams from the three S vices, officers and other ranks, met irrespective of amate or professional status. During the last two years the Arm has become an amateur body in boxing, and more recen the R.A.F. has taken the same course. The conditions c taining in the Navy have not permitted of this course bei followed, and consequently a large number of naval boxe retain their professional status. The Army Boxing Assoc tion does not feel justified in sending its representative tea of amateurs to compete for the trophy with the mixed tea of amateur and professional boxers of the Navy.

The Airship Works.

The Air Ministry have notified that it is desired to certain vacancies for unestablished draughtsmen at the Ro Airship Works, Cardington, at the earliest practicable da The Admiralty have called for reports giving the nam qualifications, and experience of any temporary draugh men who are about to be, or have recently been, discharg who desire to be considered for these appointments, and w can be well recommended, distinguishing between ex-Serv and non-Service men.

An Award.

The Air Ministry announces:—H.M. the King has be pleased to approve the award of an Air Force Cross to M A. J. Cobham in recognition of the valuable and distinguish service he has rendered to aviation by his recent Londo Cape Town—London flight and previous flights such as London—Rangoon—London, (2) London—Egypt—Palestin Syria—London, (3) London—Tangier—London and London—North Africa—Italy—London.



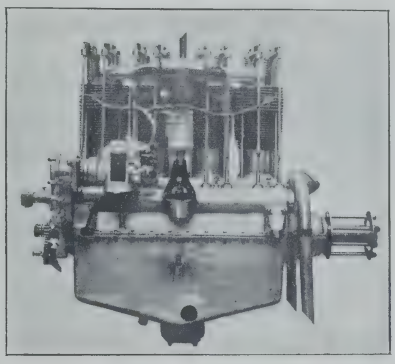
CO-OPERATION.—A Meet of the Belvoir Hunt at the R.A.F. Station, Spittlegate. The shed and machines belong to 39 Bombing Squadron.

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WITHOUT A SINGLE INVOLUNTARY STOPPAGE.

We have received a letter from the Chief Instructor of the Newcastle-upon-Tyne Aero Club, Major L. A. Packman, referring to the reliability of the three A.D.C. "Cirrus" engines in use by the Club, which letter we reproduce below :



Cramlington Aerodrome,
Cramlington, Northumberland,
12th March, 1926.

A.D.C. Aircraft, Ltd.,
Regent House, Kingsway,
London, W.C.2.

Dear Sirs,

Having run three of your 27/60 h.p. "Cirrus" engines for an aggregate of four hundred and fifteen (415) hours without a single involuntary stoppage I feel it is incumbent upon me to acquaint you of the fact.

Engine reliability is of course at all times of the utmost importance but its value is especially enhanced when used in a training machine, where confidence in one's engine is of inestimable value to a pupil.

Your achievement in producing a Light Aeroplane Engine of such outstanding merit is, I consider, worthy of the highest praise.

Yours sincerely,

L. A. PACKMAN, Major (Retired),
Instructor to the Newcastle-upon-Tyne Aero Club.

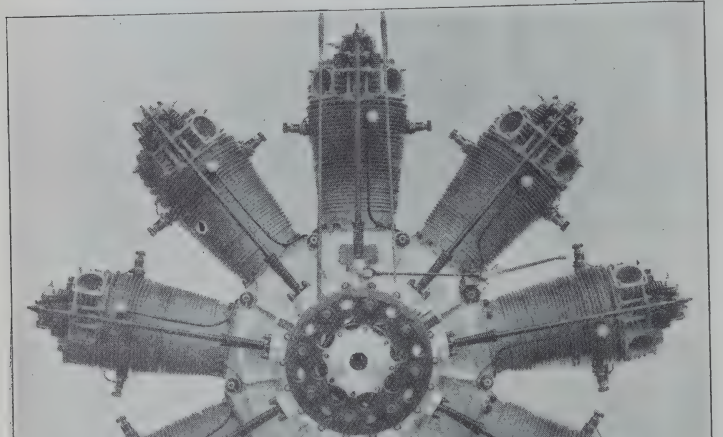
A.D.C. AIRCRAFT LIMITED,
REGENT HOUSE,
89, KINGSWAY, LONDON, W.C.2.

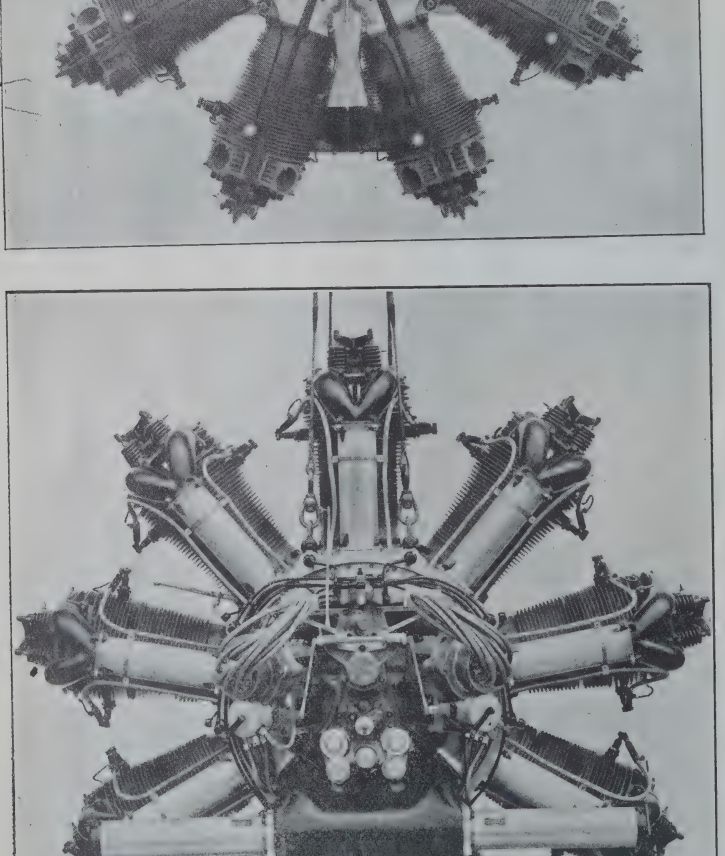
Telephone:
Regent 6240.

Cables:
"Airdisco, London."

THE BRISTOL JUPITER, MARK VI.

On a recent visit to Filton the Jupiter engine "of the latest series" which has recently concluded 25,000 miles and 225 hours 54 minutes of flying between Croydon and Filton was on exhibit in the stripped condition. It will be remembered that this engine was officially sealed by the A.I.D. so that no replacements or overhauls could be made without breaking the seals, and that the engine ran faultlessly throughout the trial. It was in no way nursed during the tests, but was hard worked during a period of extraordinarily bad weather, often at full throttle, for long periods and never at less than 70 per cent. full throttle.





On removal from the Bristol Bloodhound at the end of the trial the engine was transferred without adjustment to a Heenan and Froude brake and was run for five minutes at normal r.p.m. and full throttle. The output was 440 b.h.p. On test prior to the flight trial the output was 452 b.h.p., a really surprisingly small superiority in its new state.

On stripping—under A.I.D. supervision—it was found that one exhaust valve had stretched slightly, and one inner valve spring had broken. These were the only parts which required replacement to put the engine into completely serviceable condition.

Apart from the valve and valve spring mentioned, the only sign of wear that can be detected by inspection (i.e., not measurement) is a minute step—just perceptible to touch—on some of the gudgeon pins. The A.I.D. measurements of wear give the average wear of gudgeon pins as 8 ten-thousandths—so that touch is quite a delicate test in such matters—and, as the official figures show, these items on measurement showed nearly the greatest degree of wear discovered.

In all cases such wear as did occur was of a most uniform nature, there being no sign of grooving in any of the bearings.

This type of Jupiter engine is unfortunately still on the "secret" list in regard to detailed construction, and for some reason—for the totally irrational can be said to have a reason—it is not even permitted to refer to its series number. This of course is practically unimportant, for everybody knows what that series number is. But it is ridiculous that certain details of construction which contribute largely to the very excellent performance of this type should not be mentionable in print. The degree of real secrecy attained by official policy in this respect becomes obvious when it is realised that a considerable number of these engines are shortly to be delivered to a foreign Power, and that fifteen or twenty will be in the hands of Imperial Airways within the next few months, and that these details will necessarily be known to the civilian staff who have to keep them in running order—in fact probably are already well known to them.

The general effects of these alterations in design however are sufficiently striking—even if the alterations themselves may not be mentioned. The new engine is some inches smaller in diameter, with the result that the engine has 12 per cent. less frontal area than the earlier Jupiters. (One does not quite know whether the number of inches saved in diameter is on the secret list or not, but the overall diameter of the Jupiter IV is public property there will be no serious difficulty in discovering the reduction corresponding to this 12 per cent. saving in frontal area.) The weight of the

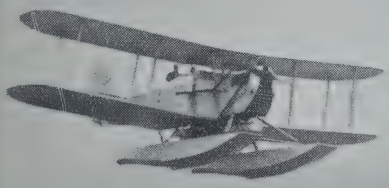
THE JUPITER MARK VI.—Rear end view showing the arrangement of auxiliaries. At the bottom the triple carburettor, which is now constructed entirely by the Bristol Co. Above this are the oil pump and filter assemblies with the inclined magnetos on each side. Standing vertically above these will be seen the distributor for the gas-starter, surmounted by a fitting for the speedometer drive.

The extremely compact, yet accessible arrangement, of these accessories is a notable achievement on the part of the designer.

Above is a symmetrical front view of the engine.

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new series is reduced by 80 lbs., and the output at both normal and maximum r.p.m. has been increased by 50 b.h.p. The new Jupiter weighs 1.6 lbs. per h.p. at normal output, and 1.49 lbs. per h.p. at maximum permitted r.p.m.

This type of engine has actually been in production for over six months and passed its official test in the autumn of 1925 without any hitch or trouble of any kind, and without any wear calling for the replacement of parts. Unfortunately even this type-test is on the secret list, so details of the performance are lacking.

However the results of the much more convincing flight test are now well known, and will suffice to establish this engine's reputation even more firmly than the type test results One of the most important features disclosed on this test is that throughout there was no sign of increasing fuel consumption. The average petrol consumption overall was 21.9 galls. per hour—a figure which is if anything less than that shown during the first 50 hours. The oil consumption averaged 3.95 pints per hour throughout, and here again there has been no sign of increasing consumption towards the end of the trial.

The official A.I.D. statement as to the condition of the engine after the test is as follows :—

TOTAL RUNNING TIME 225.9 HOURS.

CONDITION OF MAJOR COMPONENTS AFTER TEST.

Component.	Average w during te
Cylinder bore	Nil.
Piston	.0006
Gudgeon pin dia.	.0008
Small end bush bore	Nil.
Wrist pin dia.	.0003
Wrist pin bush bore	Nil.
Crank pin dia.	.0002
Big end bush bore	.001
Big end bush outside dia.	.0007
Master rod liner bore	Nil.
Cam sleeve bush bore	.0005
Crankshaft sleeve	Nil.
Eccentric gear bore	Nil.
Eccentric floating bush outside dia.	.0005
Eccentric floating bush bore	Nil.
Eccentric outside dia.	Nil.
Crankshaft tail bearing	.0008

The general condition of the engine was excellent. shown in the above table the amount of wear was in no sufficient to require replacement.

CIVILIAN AND AIRSHIP PARACHUTES.

By Lt.-Col. H. S. Holt, C.B.E.

The question of equipping civilian passengers with parachutes is beginning to be seriously discussed. This is the natural outcome of the decision of the principal Air Services of the World to equip their personnel with this device.

The French Government are considering the introduction voluntary or compulsory of parachutes of some type on their air liners : and there can be no doubt but that when once Civil Aviation gets going in America they will be made compulsory there. The old idea that the presence of parachutes on aircraft would frighten intending passengers is becoming exploded—and it is recognised that they would rather add to the confidence of the civilian than otherwise.

In the years immediately succeeding the Armistice, when the " anchored " types of parachute, such as the Guardian Angel, were the only accepted types in this country and there were found to be practical difficulties in installing them on certain machines, the makers sometimes put forward what I always thought was the absurd contention that Service machines ought to be especially designed to carry their parachutes, even if it entailed making radical alterations in their main structure. Naval architects never alter the main lines of their ships merely to facilitate the use of their boats : rather the launching mechanism has to be adapted to the ship's structure.

The same general principle applies to civilian aircraft, though perhaps not quite as rigidly as in the case of Service machines. At any rate I think it is a safe rule for the civilian parachute inventor to assume that the parachute has got to be designed for the aircraft and not the aircraft for the parachute.

Bearing this in mind the problem seems to divide itself under two headings,—(A) for passengers not exceeding say four on open machines and (B) passengers on the large air liners with covered-in saloons.

I will deal with (A) first as it does not present any very great difficulties.

Various schemes have been proposed for multiple passenger parachutes by which the passengers sit in a basket or other contrivance which can either be lifted bodily out of the machine or dropped through a trap-door in the floor. These have the great merit that they are controlled by the pilot and if we could only be sure that the machine would always be in a normal flying position when the occupants have to abandon it, they would undoubtedly be the best.

Unfortunately the exact opposite is the case. And, therefore, at present the only solution is the one-man parachute. Until their recent conversion to the free parachute it was one of the axioms of the Air Ministry that after a man had jumped overboard with a parachute he must be regarded as an inanimate object without volition of its own. Now the Air Ministry has gone to the opposite extreme and every novice at the first time of asking is required to jump overboard and then coolly count " one, two, three," while falling in mid-air and before pulling his hand release—a pretty severe test of nerve and self-possession. That it has caused only one death in 12 months is a fine testimony to the quality of our airmen.

To expect untrained civilians to do this is of course out of the question and some other system for releasing the parachute must be employed.

So far as I am aware there are only two alternatives—either a delay mechanism which the passenger sets in motion pulling a hand lanyard before jumping overboard, a syste employed in my earlier types of Autochute, or an autom or static lanyard.

A mechanical delay mechanism can be made to funct without any lubricant, and it should have a large margi spring power over what is actually required. Though delay mechanism had only to run for a maximum of seconds it had sufficient spring energy to run a small c for a month.

The other alternative, the static lanyard, functions as lows :—A cord fifteen to twenty feet long is wound on a or into a ball, and attached to the fuselage at a suitable s the free end being connected to the bolt, or other de which keeps the parachute pack closed, in such a way sufficient pull on the cord will release the parachute, an the same instant the cord is itself released from its connec to the pack and remains behind on the machine.

If the passenger keeps his head at all he ought to be to pull the hand cord that sets his delay mechanism in mo immediately before he goes over. Unfortunately we ca count with any confidence on that and therefore I am incli to regard the static lanyard as the best solution.

The expert Service parachutist has no need for this de and is better without it. But for the inexperienced pe whether Service or civilian it is invaluable.

If Gilbert, who was killed in the U.S.A. Mail Service,



QUICK ACTION.—The Holt Parachute, with a q attachment device, specially devised for crews and sengers of airships, as described in the accompanying ar

"Mr. Cobham and his machine have come victoriously out of a wonderful feat of endurance, which proves—if proof were needed—that the British aeroplane and the British airman are as good as any in the world."

Leader, "MORNING POST," March 15.



Photo by courtesy of the "Daily Mail."

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R.A.F. PARACHUTES.—On the right is the seat-parachute. The wearer is shown with his hand on the ring which releases the pilot parachute. The two other pictures show the double parachute equipment—the back and lap types which are worn together when practising, so that if one fails the other can be used. In the left picture the two release-rings may be seen.

had one of my Autochutes with static lanyard he might be alive now. He should have had it, as he was evidently not a trained parachutist or he would not have released his parachute before jumping.

The only possible objection that can be brought against the static lanyard is the possibility that it might get entangled in or wrapped round some portion of a crashing machine. But even if this happened, and it is not very likely because the whole action is so quick, it would only mean that the parachutes were released nearer to the machine than was intended and very likely no harm would be done. In any case the passenger would be much better off than if he had used a hand release and pulled it before jumping, which would mean almost certain disaster.

To turn now to the much more difficult problem—(B)—the large liner with enclosed saloon.

Here again various suggestions have been made for t doors or sliding roofs with one enormous parachute. the same objection holds as in the case of (A).

I can visualise only one case in which something of t sort might be of real value and that is in the event o machine catching fire when over the sea. Several years I devised a scheme for this special purpose.

Very briefly outlined the scheme was this—An inner tachable shell to the saloon somewhat on the lines of a l boat, a system of four parachutes stowed in a special man under the saloon roof. The latter was bisected longitudin and also had a large trap-door under the control of the pi When the trap-door was opened the pilot parachute ejected, followed by the other three. As soon as the m parachute was clear of the trap-door, the pull of the life-l automatically released the two sections of the roof which



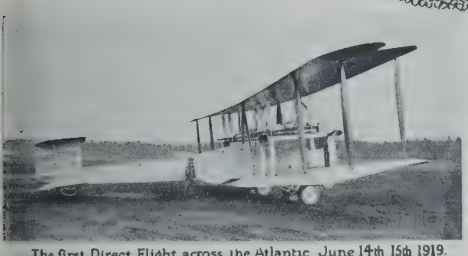
PARACHUTE PACKING.—The Serjeant on the right is holding up the pilot parachute while the airmen assist with the main parachute.

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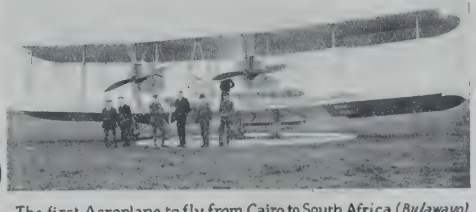
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off sideways leaving a clear way for the " life-boat " to be lifted out of the saloon as soon as the main parachute became inflated.

I believe a scheme on these lines is perfectly feasible but I doubt if it will ever be required, as in the very near future the risk of fire on large passenger machines should be completely eliminated. I think therefore that (B) like (A) resolves itself into a " one man one parachute " problem.

One thing is certain, whatever principle we adopt, we can never hope to save everyone. There will always be a proportion, a considerable portion, of the passengers who will lose their heads utterly, just as there are some persons who will be burnt to death sooner than jump into a blanket 50 ft. below them. Therefore I think it will be always a mistake to install elaborate and complicated devices to achieve the impossible.

Another thing is equally certain and that is that considerable structural modifications would have to be made in the saloons to allow for quick and easy egress in case of disaster. And in saying this I am not contravening the principle I laid down at the start : because a saloon should be no more regarded as part of the main structure of an aeroplane than is the deckhouse of a ship.

In choosing the method of release of the parachutes we again have the two alternatives. The drawback to the delay mechanism is the possibility that in the confusion a passenger may find that it takes a good deal longer to get clear of the machine than he anticipated when he started his delay mechanism, with the result that the parachutes may be released before he has left the machine. The perfectly collected individual would wait to start the mechanism till he was actually in position to jump, but few probably could be relied on to do that.

On the other hand the objection to the static lanyard is that in moving about in the saloon the different lanyards would be apt to get inextricably tangled up.

I brought out recently an improved form of my quick attachment pack which can be picked up and attached to the harness with one hand only and in less than one second an I think something of this sort will prove to be the best solution for the big machines as well as for airships. The bo on the pack would only enter the socket on the harness which it belonged, and harness and pack would both b numbered conspicuously and every passenger would have h pack pointed out to him.

Each pack would be hung up at the side of the window other opening nearest to the passenger to whom it belonge the static lanyard being carried up to the ceiling. As it essential that egress should be possible from either port starboard side, the drum carrying the lanyard must b mounted to run on a rod fixed transversely on the ceiling, the drum may be fixed at the centre and the lanyard double back on itself and held to the ceiling by clips. This I thin reduces to the minimum possible, without very complicate gadgets, the risk of the different lanyards getting prematurel entangled.

Much of what one has said about saloon machines applie equally to the problem of saving civilian passengers on ai ships. The case of the crew, however, is somewhat differen Though probably not expert parachutists, the men are a any rate disciplined and can be relied on to keep their heads.

I remember the late Air Commodore Maitland telling m once that he found it almost impossible to induce his ai ships' crews to wear parachutes while at work, and no dou they must hamper them very much, especially in the gondola Therefore I think in this case also the quick attachmen pack promises the best results. And as it is for the use disciplined men it could be fitted either with delay mechanis or a static lanyard 40 or 50 ft. long, while the officers, bein presumably experienced parachutists, would have a hand r lease only.

Whether some or all the members of the crew should hav their own pack with non-interchangeable socket or whethe the packs should be hung up at various places and each on available for the man who happened to be nearest to it, is question that could only be settled by experience.

SCHNEIDER FACTS.

The following notice has been issued by the Royal Aero Club concerning the failure of Great Britain to enter a team for the contest for the Jacques Schneider Maritime Trophy :—

At a meeting held at the Royal Aero Club on the 19th March, 1926, at which representatives of the Air Ministry, Royal Aero Club, Society of British Aircraft Constructors and others interested in the Schneider Cup contest were present, it was unanimously decided that it was inexpedient for the Royal Aero Club to make a challenge for the Schneider Cup Race this year.

The following explanation has been issued by the R.Ae.C. on behalf of the Air Ministry, the Society of British Aircraft Constructors and itself :—

SCHNEIDER CUP 1926.

The Regulations for the Race each year cannot be issued until after the January Meeting of the Federation Aeronautique Internationale and this does not allow sufficient time for the design and construction of machine and engine, testing machine, training of crew and organisation and despatch of complete unit to the United States. The Royal Aero Club will, therefore, suggest to the Federation Aeronautique Internationale that the Cup, if still in existence, should be competed for every two years instead of annually as at present.

For this year a considered policy of high speed development is being undertaken. Orders have already been given by the Air Ministry for a number of high speed machines and engines, delivery of which is promised in the summer. These machines will be thoroughly tested out and as a result further machines will be built which will be available for the Race in 1927 if it is still open.

The Air Ministry will give every encouragement for these machines to make attempts on World's Records this year, and if successful it is thought the results will be of far more importance to British Aviation than attempting, under the present conditions, to win the Schneider Cup.

The whole question has been most carefully considered by the Air Ministry, the Aircraft Industry and the Royal Aero Club, and they are in unanimous agreement with the views set out above.

These announcements were made to representatives of the Press at the Royal Aero Club on Mar. 23 with Lt.-Col. Frank McClean, A.F.C., in the chair.

Mr. Sopwith, on behalf of the S.B.A.C., said that they were the result of a series of unanimous meetings. The Air Ministry was as anxious as the Trade to win the Trophy. They might be asked why they did not start to build the day after losing last year. The answer was that the rules might be altered. A suggestion to make the contest a weight-carrying competition nearly went through last year. If it had, and if we had built speed machines we should have been in the soup. The rules were not settled till February and it was not fair to ask any nation to evolve a team in six months. If the contest could be fixed on a once-in-two-years basis it would improve the design of aircraft.

Lt.-Col. Bristow said that it might be possible in the time to get a few machines away, but the tests would be inad quate, and an accident might result in no machines going.

A question by Mr. Colebrook elicited the information th the new proposal would be put up at the F.A.I. Meeting September and that nothing definite could be done till then which seems to place us for a contest in 1927 much as w were last year for a contest in 1926.

Another question by Major C. C. Turner elicited the furth information that Sir Sefton Brancker had in fact been di cussing with the representatives of the U.S.A. the questi of America again refusing to walk (or fly) over and claim t Schneider Trophy as a permanent possession.

One's own personal opinion is that considering the matt as a nation of shop-keepers we have done precisely the rig thing. And, as one speaker remarked at the meeting, th contest is now purely a matter of business, backed as it by the Governments of each competing nation.

Nevertheless, considering that the Royal Aero Club supposed to foster the Sport of Flying, one cannot help fe ing that some of the millionaires whose names appear wi purely decorative effect on the Council of the R.Ae.C. mig have put up the price of a decent race-horse in order to su port the honour of British Sport. The statement that a repr sentative team would cost £150,000 can easily be justified one is making out a method of spending somebody else money. But a couple of machines which would stand as go a chance of winning as anything else in the World cou easily be built for £20,000—and could still be built in tim if some good sportsman would put up the money and co pel the Aero Club to challenge before Wednesday nex March 31.

If the Americans do not fly over and claim the trophy th year they are better sportsmen than need be and worse bu ness men than they ought to be.—C. G. G.

AN INSURANCE CHANGE.

Official intimation has been received from the Briti Aviation Insurance Group, consisting of the White Cro Aviation Insurance Association of Underwriting Members Lloyds and the Union Insurance Society of Canton Ltd., i corporated in Hong Kong, of 78-80, Cornhill, London, E.C that Captain A. Newman's services with the Gro terminated on March 19, 1926, and that he is no longer any way connected with the Group.

Captain A. G. Lamplugh is temporarily taking over t duties hitherto performed by Captain Newman, as well doing his own work. Captain Lamplugh is an experienc war pilot and combines flying experience with a good worki knowledge of aircraft engineering and considerable co mercial ability, so he should be very successful in his e tended area of influence.



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THE FLYING CLUBS.

The London Aeroplane Club.

The total flying for the week ending Mar. 21 was 23 hrs. 15 mins.

The following members had flying instruction:—L. J. C. Mitchell, O. J Barros, Sir John Rhodes, Mrs. Atkey, G. Wallcousins, E. D. Moss, W. Hay, A. Lees, R. P. Cooper, Miss O'Brien, S. W. Bradshaw, A. Southgate, H. Kennedy, R. C Presland, L. G. Anderson, R. Malcolm.

The following members made solo flights:—Major K. M. Beaumont, Mrs. Eliott-Lynn, Mr. P. G. Lucas, and Mr. N. Jones.

Mr. D. Kittell on his own D.H. Moth was flying on Saturday and Sunday.

Mrs. Eliott-Lynn and Mr N. Jones flew to Yeovil on Saturday on a Moth recently taken over by two members from the de Havilland Co.

The following subscriptions have been received towards the purchase of a third Moth:—D. Watt, £5; D. Foulerton, £3; Miss Horsman, £2; H. Solomon, £2. Subscriptions already published, £678. Total to date, £690.

Capt. F. G. M. Sparks, the Senior Instructor, is laid up with acute bronchitis and pleurisy and will be away at least a fortnight.

The flying time of the Club has now exceeded 500 hours.

The Lancashire Aero Club.

G-EBLV and G-EBMQ were in use up to Saturday, on which day a broken piston ring put MQ out of action, this machine being replaced by G-EBLR. Flying has been possible on all days except Monday and Friday.

Mr. Stack, the new Aerodrome Manager and Chief Pilot, gave instruction to:—C. Agar (3 hrs 20 mins.), R. Wade (3 hrs. 15 mins.), B. Smith (2 hrs. 20 mins.), S. Gattrell (1 hr. 35 mins.), A. Goodyear (1 hr. 30 mins.), A. Barnes (1 hr. 20 mins.), R. Turner (1 hr. 5 mins.), L. Slater (50 mins.), A. Macnair (30 mins.), C. Brown (30 mins.), R. Colley (30 mins.), D. Tummers (25 mins.), J. Leeming (25 mins.), A. Leigh (15 mins.), and M. Lacayo (10 mins.).

Mr. Cantrill instructed:—C. Brown (1 hr. 10 mins.), A. Goodyear (35 mins.), and J. Leeming (30 mins.).

Mr. Scholes instructed:—R. Williams (55 mins.), J. Leeming (45 mins.), P. Michelson (35 mins.), and S. Crabtree (35 mins.).

Solo flights were made by:—A. Goodfellow (30 mins.), M. Lacayo (40 mins.). A joy-ride was given to Miss D. Shires (10 mins.).

Tests occupied 1 hr. 35 mins. Total dual, 23 hrs. 5 mins. Total solo, 1 hr. 10 mins. Total time flown, 26 hrs.

Members are asked to note that the aerodrome is closed each Monday, which is the Staff's day of rest.

Joy-rides can be given to members only.

The Newcastle-upon-Tyne Aero Club.

Slightly improved weather conditions enabled a considerably larger amount of flying to be carried out during the week ending Mar. 21.

The Club is still hampered by having only one machine in service, however, and, of course, one Instructor. All previous records, using one machine, were passed on Sunday when 8 hrs. 15 mins were flown. [A member of the staff of The Aeroplane remarks—"Sweated labour."—Ed.]

The total for the week was 29 hrs. 15 mins., made up as follows:—With Major Packman, dual instruction, 15 hrs. 20 mins.; secondary dual, 4 hrs. 5 mins.; passenger flights, 3 hrs. 45 mins.

"A" Pilots flying with passengers, 5 hrs. 45 mins. Engine test, 20 mins. (overhauled engine).

The following members had instruction:—Mrs Marcks, Miss Leathart, Messrs. George, Somerville, Twine, Irving, Leete, W. Todd, Bainbridge, Campbell, Micsagaes, Whitfield, C. Thompson, L. Smith, Sandilands Bruce. (Secondary dual) Messrs Stobie, Heppell, Thompson, Irving, Thompson, Miss Leathart. "A" Pilots who flew:—Messrs. Stobie, Heppell, R. N. Thompson, N. S. Todd, W. Baxter Ellis.

The Club was visited by the President, Colonel Sir Joseph Reed, on Sunday morning and he was taken for a flight of one hour by Mr. Ellis. After about half-an-hour Mr. Ellis landed near Warkworth to inquire as to whether Sir Joseph was enjoying himself. Each had a cigarette and then proceeded on the return journey to the aerodrome. Sir Joseph stated that he had thoroughly enjoyed the trip.

Other passengers who during the week flew with Major Packman were:—Capt. Roberts, Mr. Stewart, Mr. Alderson, Mr. Deucher, Mrs. Robson, Mr. Robson, Miss Crowther, Miss Wilkie, Miss Fail, Ratcliffe.

The Yorkshire Aeroplane Club.

The Yorkshire Club has been most unfortunate. Immediately following the gale period, Mr. West, the Instructor, went down with week's 'flu, and after that the engine of the Moth decided to st

The engine has cut out four times in the air up to date, necessitating two forced landings, which luckily occurred on the aerodrome. Unable to spot the trouble, the Club mechanics dismantled the engine and had the magneto tested. It was found that three rings were jammed in their grooves and it was necessary to b one ring to pieces to get it out of the groove. On reassembling it been impossible to get more than 1,700 out of the engine, and not steadily. An A.D.C. fitter has gone to Sherburn to rectify

The only bright spot on the horizon is the fact that one mem Mr. Smith, has paid a deposit on the English Electric Co.'s Wren will take delivery as soon as she is reconditioned. It is the ma that Sq. Ldr. Longton flew in the Lympne trials. Two other mem are contemplating sharing a D.H.6.

It is most unfortunate that there should have been trouble at point for three members are within an hour of going solo.

The first dance given by the Club will be held on Friday ne the Midland Hotel, Bradford.

AIR AFFAIRS IN PARLIAMENT.

AN APPOINTMENT.

The Air Ministry announces:—The Rt. Hon. Sir Sa Hoare, Bt., C.M.G., M.P., Secretary of State for Air, appointed Mr. Geoffrey Lloyd to be his Assistant Pri Secretary (unpaid).

PRIVATE FLYING.

In the House of Commons on Mar. 17, in answer to Colonel Sir P. Sassoon said that the question of the possible relaxatio some of the existing Regulations governing private civil flying been the subject of discussion with representatives of the Royal nautical Society, the Air League and other aeronautical bodies, the views expressed are now being most carefully considered b Air Ministry. The whole matter was being looked into, an hoped to report in a short time.

EMPIRE AIR COMMUNICATIONS.

In the House of Commons on Mar. 17, Sir H. Brittain asked Secretary of State for Air whether, following the successful fl which have been and are being made from North to South A and vice versa, it is the intention of his Department to develop fu aviation in that continent; and, if so, whether he can give the H any outline of future plans?

Sir P. Sassoon: I am obliged to my hon. Friend for raising question. As I stated when introducing the Air Estimates, most anxious to further by all possible means the developme Empire air communications. Something has already been do this direction in Africa. Proposals are under consideration fo establishment of an air service from Khartum to Kisumu, a understand that a recent conference of Colonial Governors at Na approved in principle the granting of financial assistance fo experimental service on this route. The question of the esta ment of a regular service, with an extension in due course to will depend upon the result of the experiment and the prospec adequate financial support. The development of aviation in Union of South Africa and Southern Rhodesia is, of course, prim a matter for the Governments concerned, but I propose to take opportunity afforded by the Imperial Conference next Octobe discuss with the Dominion representatives the question of Imp air routes and their future development.

Lieut.-Cdr. Kenworthy: May I ask the hon. and gallant Me whether there will be a regular plan laid before the Imperial ference for this service?

Sir P. Sassoon: I should imagine so. The whole matter wi thrashed out.

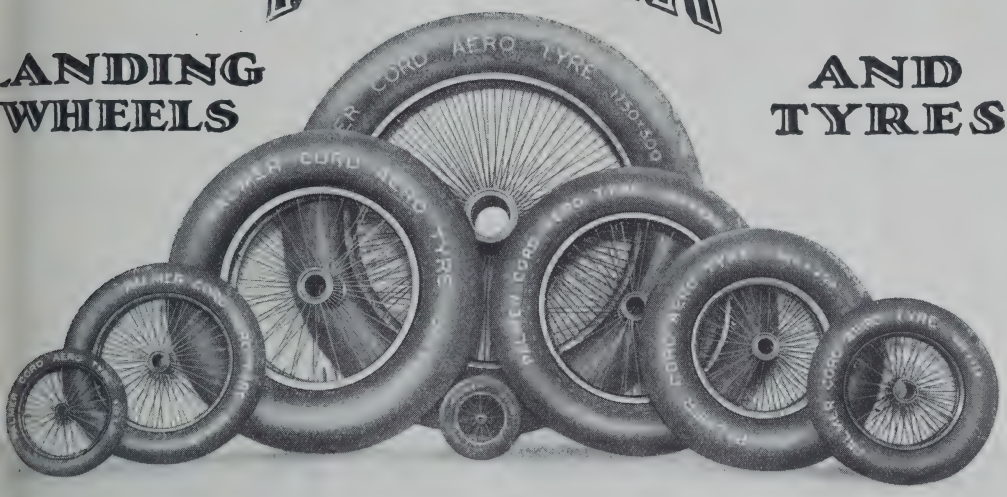


THE MORNING AFTER THE NI BEFORE.—A cheery group on Lancashire Aero Club's Aerodr early in the morning after the C latest successful dance. From lef right the personages are, Mr. Bar (Ground Engineer), Mrs. Leeming, Hill, Mr. J. E. Leeming, Miss Barbara. Mr. Neville Stack, Club's Aerodrome Manager and C Pilot, is standing in the fuselage in evening dress). The two on the r are Miss Betty Chester and Mr. Burnaby, of the Co-optimists, who helped at the party earlier in the ceedings. Mr. Burnaby does not pose to become a Moth pilot.

(Photograph by Allied Newspapers, chester.)

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300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132 46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132 46
,,	101	178.	31.75	132/46
00×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132 46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

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D (346)

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 16; Wednesday, 16; Thursday, 15; Friday, 15; Saturday, 16, Sunday, 5.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 57, passengers 180, freight 10 tons.

AIR UNION:

Paris—London: Machines 22, passengers 50, freight 8 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 28, freight 2 tons.

PRIVATE:

DE HAVILLAND, 1 machine to Marseilles and back.

MR. LESLIE HAMILTON'S Vulcan and three passengers from St. Moritz.

MR. TRAVER'S D.H.9 to Nice.

Total number of trips by British Machines, 60, carrying 184 passengers. Foreign Machines, 34, carrying 78 passengers.

Comparative Figures:

Week ending Mar. 21:

Machines, 94; Passengers, 262; Crews, 116; Total personnel, 378

Corresponding week. 1925

Machines, 74; Passengers, 200; Crews, 90; Total personnel, 290.

Corresponding week, 1924:

Machines, 98; Passengers, 255; Crews, 166; Total personnel, 421.

Corresponding week, 1923:

Machines, 71; Passengers, 234; Crews, 122; Total personnel, 356.

Corresponding week, 1922:

Machines, 50; Passengers, 129; Crews, 84; Total personnel, 213.

Corresponding week, 1921:

Machines, 44; Passengers, 168; Crews, 62; Total personnel, 230.

Croydon Notes.

The Summer fares on the Paris route come into being on Apr. 19. On that day both Imperial Airways Ltd. and the Air Union will increase to £6 6s. single and £11 11s. return. Imperial Airways are doing nothing special in the way of excursions for Easter, though the Winter low fares will still be in operation. Air Union are offering a special excursion between Paris and London at £9 return.

It is understood that this is the last season during which such high fares will be in operation. Next winter the fares will come down to about the same level as the train and boat.

At present the Paris route is the most expensive of all per miles. This is apt to frighten passengers, who have only flown to Paris, away from the other routes, as they imagine that they are equally expensive in proportion, which is not the case. For various reasons the fares cannot now be reduced before the Winter, but they will "fall like Lucifer, never to rise again" in the Winter.

A somewhat alarming experience befell the Hampstead last Sunday. She was coming from Paris piloted by Mr. Dismore with 13 passengers aboard and when near the coast the airscrew came away from the starboard Jaguar engine and damaged a wing. Mr. Dismore managed to get down safely at Littlestone. It is singularly fortunate that a serious accident was averted and Mr. Dismore is to be congratulated on landing the machine without further mishap. A pilot with less judgment might have carried on with two engines—to demonstrate the alleged infallibility of the three-engined system—and the damaged wing might have burst in the air in consequence, with fatal results. But such mishaps ought not to happen in these days.

Mr. Dudley Travers left the aerodrome for Nice on a D.H.9 on Friday with a special passenger. He hired the machine himself and proposes to operate as an air-taxi pilot.

Mr. Hubert Broad flew to Marseilles on a Jaguar D.H.9 during the week to pick up photographs from India of Sir Hari Singh's coronation. He arrived at Croydon on Friday, having flown from Marseilles in 7½ hours. That is how air travelling ought to work. There is small satisfaction in getting to Paris in three hours and then taking 15 hours more to reach the Riviera by train.

Next Tuesday the fleet of the new W.10s (Napier) will fly over from Cricklewood to Croydon in formation on being handed over to Imperial Airways Ltd. They will be inspected by Sir Samuel Hoare and will be christened by Lady Maud Hoare. What Anglo-Indians call a *Hellofa Tamasha* will ensue.

The Croydon publicists are evidently losing their nerve. Not a single record was established between anywhere and nobody flew to the dying bedside of anybody. *Ichabod.*

Something of a sensation has been caused by the announ ment that the Croydon magistrates have refused a licence build a new hotel on the other side of the aerodrome, as p of the new terminal buildings. If the Air Ministry offic are unable to circumvent a few local justices it is time t relinquished their jobs.—G. D.

Brooklands Notes.

Mr. Cobb has been flying his Clergêt Avro each week- when it has not been having a fit of non-starting.

Mr. Dudley Watt's Sopwith Grasshopper has done sev hours during the month piloted by its owner.

Mr. Preston and Mr. King have also done several flig on the B.E.2E. Mr. Preston is purchasing a lower powe machine and has the B.E. for sale with certificate of worthiness from Feb. 12 for £155. Or he is willing to c sider the exchange for a motor-car of equivalent value.

Mr. Leslie Hamilton has arrived from abroad in his Vick Vulcan, which is now at Brooklands.

The Southern Aviation Co. have sold their Sopwith G which has unfortunately since been "written off" at Hor

Vickers Ltd. tested a Vendace training machine on Fri

Hawkers have also been doing some testing.

The Air Navigation Co. brought the A.N.E.C. III seater to the André shed for erection on Friday. It expected that this machine would be tested by Mr. King Tuesday. It certainly is a very nice-looking machine.

THE NEXT R.Ae.C. HOUSE DINNER.

The Monthly House Dinner fixed for Tuesday, Mar. had to be postponed on account of the illness of Sir Sam Hoare, the Secretary of State for Air, who has promised open the discussion on "The Future of Flying." A date April will be announced later.

THE TYPE TEST OF THE D.12.

Further particulars are now available concerning type t of the Curtiss D.12 engine at Farnborough.

After the stoppage caused by a screw coming loose in oil pump after 92½ hours' running, the engine was put on a fresh ten-hour run instead of merely doing the remain 7½ hours of the last ten to complete the regulation 100 ho After finishing the ten hours the usual high-speed and f power runs were done as the test requires.

At the completion of the test the engine was stripped examined as usual, and everything was found to be in cellent order. The condition of every part of the engine exceptionally good.

BRITISH ENTERPRISE ABROAD.

On Mar. 18, General Pangalos, the Greek Prime Minis inspected the aircraft factory at Phaleron which is organi and managed by the Blackburn Aeroplane and Motor Ltd. After the tour of inspection, during which he congra lated Mr. R. Blackburn on the organisation of the fact General Pangalos proceeded to Tatoi where he witnes the tests of the first machine manufactured at the fact for the Greek Government.

The machine, a Velos torpedo-carrier and bomber (450 Napier Lion engine), was piloted by Col. the Master Sempill. The machine, carrying a 15-cwt. torpedo, passed its tests satisfactorily.

BRUSSELS—BELGIAN CONGO.

At 06.48 hours on Mar. 9, Lieuts. Medaets, Verhägen mechanic Coppens of the Belgian Army left Brussels to to the Belgian Congo in seven stages, and landed at grade at 14.15 hours the same day. They are using a Breg XIX biplane fitted with a 450 h.p. Hispano-Suiza engine

On Mar. 10 they left Belgrade at 07.00 hours and arri at Athens at 12.00 hours.

On Mar. 15 they were reported to have left Heliopolis after nine hours landed at Atbara, a distance of 900 mil

On Mar. 19 they arrived at Lisala, Belgian Congo.

COPENHAGEN—TOKYO.

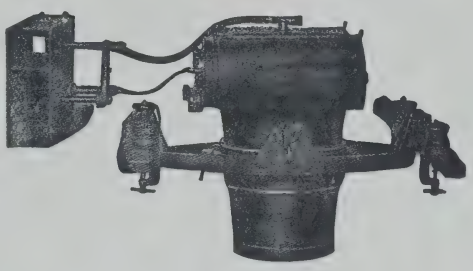
On Mar. 16, Lieuts. Botved and Herschend of the Dan Army left Copenhagen on two Fokker C.V biplanes (450 Hispano-Suiza engines) to fly to Tokyo. They reached Be at 13.30 hours the same day.

On Mar. 21 Lieut. Herschend arrived at Aleppo from C stantinople and reported that he had lost sight of Li Botved near Eski Shehr, but no cause for anxiety is fel

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ANOTHER CAPE FLIGHT.

Lieut. Mittleholzer of the Swiss Army who has already accomplished a number of brilliant flights, including one to Teheran from Zurich, and also a big photographic survey in Spitzbergen is preparing to fly to the Cape on a Junkers seaplane.

The route he will follow will be via Athens, Cairo and the Zambesi to Cape Town and back. The expedition is being financed by Swiss scientists and will specialise on the taking of cinema films of the wild animal life in the African forests.

IMPORTANT LECTURES.

The Marchese De Pinedo will read a paper in English to the Royal Aeronautical Society on "A 35,000 Miles Flight," at 6.30 p.m. on Thursday, April 8, at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

Captain G. T. R. Hill's lecture on "The Tailless Aeroplane" will be given at 6.30 p.m. on Thursday, April 22, also at the Royal Society of Arts.

THE WILKINS POLAR EXPEDITION.

The Wilkins Polar Expedition, which is now at Fairbanks, Alaska, has suffered many adventures with its aircraft equipment.

On Mar. 18 the single-engined Fokker monoplane landed heavily and damaged its undercarriage. On the following day the three-engined Fokker did exactly the same thing.

On March 21, repairs having been carried out, the three-engined machine was taxying to take off when it nosed over and was seriously damaged.

They have also experienced a small fire and one member of the expedition, a journalist, walked into a revolving airscrew and was killed.

The actual date of their departure for Point Barrow, the starting point of the Polar expedition is now indefinite and it is not certain whether repairs can be carried out locally.

The excursions and alarms suffered by the expedition suggest that this Fairbanks must be some relation to Douglas. The Mr. Wilkins concerned is the one who attempted to fly to Australia in a Blackburn Kangaroo, which stood on its head in Crete.

PERSONAL NOTICES.

BIRTHS.

DORÉ.—On Mar. 16, at 21, Dollis Hill Avenue, N.W.2, to Barbara, the wife of Gerald L. H. Doré (late R.A.F.)—a son.

MARSHALL.—On Mar. 15, to Sq. Ldr. and Mrs. G. Struan Marshall, 47, Allington Road, N.W.4—a daughter.

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THE DESIGN AND CONSTRUCTION OF AERO ENGINES. By C. Sylvester, A.M.I.E.E. With 96 Diagrams	0 6 0	2
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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXX. No. 13. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

"OVER AND OVER AGAIN."



"HAMBLING":—This is the Avro Andover (Rolls-Royce Condor III engine). It was built at the firm's Hamble works for commercial purposes, after the Hambling Committee (to which it is no relation) had produced Imperial Airways, Ltd. This photograph has appeared several times in the Avro Co.'s advertisements, but it is such a good picture that, being holiday time, and having the block in stock, there seems to be no harm in using it over and over again.

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"HINTS ON LINING BEARINGS"—a booklet summarising the result of more than fifty years' experience of the application of white bearing metals. It deals concisely, and in a practical way, with the preliminary heating and tinning of the bearing shell; heating and pouring of the white metal, down to the final operation of fitting. The initial equipment necessary when setting up a bench for the efficient and expeditious remetalling of bearings is also described, together with suggestions for making tools, i.e., jigs, or moulds, etc. In addition, a few remarks upon oilways and lubrication are included.

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MAR. 31, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 13.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON SPEED MACHINES AND OTHERS.

Those who were not already too bored with Schneider rophy rumours to read the Schneider Facts which were ıblished in last week's issue of THE AEROPLANE will have ɔticed in the explanation issued by the Royal Aero Club ı connection with the decision not to challenge for the chneider Trophy contest this year the following para-raphs :—

For this year a considered policy of high speed development is ing undertaken. Orders have already been given by the Air inistry for a number of high speed machines and engines, delivery which is promised in the summer. These machines will be oroughly tested out and as a result further machines will be built hich will be available for the Race in 1927 if it is still open.

The Air Ministry will give every encouragement for these machines make attempts on World's Records this year, and if successful it thought the results will be of far more importance to British viation than attempting, under the present conditions, to win the chneider Cup.

The explanation omits to explain by whom this policy of igh speed development is to be undertaken but it is fair ɔ assume that the undertakers are to be the Air Ministry ıd the Society of British Aircraft Constructors. Incidentally ıe word undertakers seems apposite, as the decision appears ɔ indicate the burial of the British sporting instinct.

One does not criticise the S.B.A.C. for its decision. After l, British aircraft constructors exist primarily for the com-ıercial construction of aircraft and not for the construction so-called commercial, or real sporting, aircraft when such ork is not a commercial proposition. And the construction war aircraft is about the only commercial proposition which xists to-day.

Also one cannot fairly criticise the Air Ministry for not rdering machines for the Schneider Trophy contest. The ir Ministry's job is to provide equipment for our First Line Defence and not to indulge in sporting ventures however uch individual members of the Air Council and of the Royal Air Force might like to take a hand in upholding the honour of British sport.

The people to blame are the members of the Royal Aero Club themselves, and especially their millionaire Members of Council, who never take any active interest in the Club or in Aviation in any of its manifestations. The only criticism one can make of the Air Ministry is that it pretended to help the Trade's efforts to win the Trophy and did not do so,—thus raising false hopes in those who had the Sport at heart.

What the U.S. Government Has Done.

It is true that the Curtiss racers which have won the Schneider Trophy on two occasions and have put up World's Speed Records for land machines and seaplanes were produced entirely at the expense of the U.S. Government. Apparently those who hold the purse strings, or at any rate those who have the power of loosing them, in the Navy Bureau and the Army Bureau at Washington, thought that it was in the best interests of American aviation that Government money should be spent on developing high speed aircraft.

They deliberately let the U.S. Army Air Service and the U.S. Navy Air Service loose against one another in speed competitions for the Pulitzer Trophy and the Schneider Trophy. Primarily the idea was that competition between the two Services would not only increase the keenness of the aviators in both Services but would also boost aviation in general throughout the United States. Their action had however the secondary effects of enhancing the reputation of American aircraft all over the World.

Curiously enough the amount of export business which has actually been done by the U.S. Aircraft Industry has been comparatively small considering the high standard of design and construction which the American Trade has achieved. Why this should be so is a little difficult to understand con-



PERILS ON THE SEA.—A Blackburn torpedo seaplane (Napier engine) by the Middle Witton Light, against a stormy sky, on the Humber—all indicating peril for those who go down to the sea in ships.

sidering that the American automobile trade practically dominates the World's markets, and that consequently we might have expected the American Aircraft Trade to use the World-wide ramifications of the American Automobile Trade to push its own products.

Presumably the reason is that whereas the automobile export business is done with mere commercial tradespeople all over the World the aircraft business as yet is done solely with Government officials. And their business methods are quite different from those to which ordinary motor-mongers are accustomed.

Foreign Trade.

As it is, whatever trade has been done with the nations which do not manufacture their own aircraft is mostly in the hands of the French, who have their own peculiar methods of setting to work. Something of those methods may be gathered from the letter from the Fokker Co. which appears elsewhere in this issue.

The French dominate the Central European countries because those countries pay the French aircraft manufacturers with money which has been lent to the various Governments by the French Government out of the war debts which France owes to us. That is to say, the French Aircraft Trade is really being paid with English money for supplying aircraft to the smaller Central European nations.

In other parts of the World the French get orders because they gave away a great many wartime machines and because when foreign missions go to France they are so much more lavishly entertained than they are in this country, and because the French Service d'Aviation Militaire is so much more willing to train the aviators of foreign nations at French aerodromes than we are to train them in this country.

The Junkers Company have done a great deal of business in foreign countries because, owing to the fact that Germany is not allowed by the Treaty of Versailles to maintain an air force, some of the money which might be spent on aircraft of war can be spent in subsidising civilian aircraft development. One does not imagine that every aeroplane constructed in the Junkers Works is subsidised by the German Government, but one does believe that the network of Junkers air lines all over Europe is so well subsidised that the Junkers Company can build aeroplanes at a profit. Also one imagines that all the great flights made by Junkers pilots to Turkey and Persia and Siberia and so forth are subsidised by the German Government. In which action of course the German Government is quite justified and very wise.

Mr. Anthony Fokker also has done quite a good business outside of Holland, though one gathers that he finds some difficulty in extracting money from his Russian customers. And everybody must acknowledge that his commercial success is well deserved, for his aeroplanes all fly, and fly well, and are easy to fly.

But, taking it all round, considering the comparatively small market that actually exists for aircraft all over the world the British Aircraft Industry has not done at badly. For, after all, the total amount of orders from foreign countries would not be enough to keep one big aircraft factory going full blast on a war-output basis.

British aircraft have the same high reputation for mater and workmanship that British manufactured goods of kinds have all over the World and in every country whe our machines have been sold the aviators regard their En lish aeroplanes as being the pick of their equipmen Therefore it may be seen that we have at any rate the ba of a very good foreign trade whenever the World's mark for aircraft grows to such a size that manufacturing export becomes a commercial proposition.

If we are going to acquire that foreign trade we must n be content to rest on our reputation for material and wor manship. It was because the British Motor Trade relied precisely that reputation and did not adapt itself to ov seas requirements that the Americans stepped in and pra tically captured the whole market.

It is for that reason that this "considered policy of hi speed development" deserves to be commended. If we ahead with that policy and really turn out speed machin and other aircraft possessing desirable qualities we ca when the time comes, reasonably expect to sell our machin wherever aeroplanes are wanted.

The Air Ministry's Justification.

The real question for argument is why the Air Minist should saddle itself, or be saddled, with the job of produ ing, by way of giving orders for, speed machines wh apparently have no value as fighting machines.

It is true that, as one pointed out in connection with t U.S. Air Services, the beating of World's Records and t winning of International Trophies does stir up intere among the Public and teach them to become air-minde But that again is not definitely the task of the Air Ministr One might just as well expect the Royal Navy to give imitation of the Oxford and Cambridge Boat Race on t Thames between units of His Majesty's Fleet in raci eights as to expect the Air Ministry to order speed machin and put up records either on land machines or seaplane purely for propagandist purposes.

In a way it is to the Air Ministry's advantage to impro the breed of British aircraft and so help the sale of o machines to foreign nations. That will "pass the buck," the Americans call it, to the foreigner and make him pay f the maintenance of the Aircraft Industry on which the equi ment of our First Line of Defence must depend in time war. But one does not believe that the Treasury, with policy of economy at any price, would consent to mon being spent on speed machines merely for the sake of maki the Public air-minded or to boost British aircraft busine abroad.

One believes that the Air Staff, which is quite the mo enlightened section of the R.A.F. at the Air Ministry, has h quite considerable difficulty in obtaining Treasury sanctio



QUANTITY OUTPUT.—The R.A.F. Parachute School at Henlow turning out pupils from a Vickers Vimy.

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for the expenditure of money on such things as the Cairo to Kano and back and the Cairo to the Cape flights by R.A.F. units. And even expenditure on the R.A.F. Pageant, till the Pageant proved to be a money-making concern and proof against financial loss, was viewed with disfavour by the Treasury.

Yet such performances are definitely part of the training of the R.A.F., and are good for the moral of the Air Force and help recruiting, and uphold the prestige of Great Britain all over the World. So evidently if the Air Ministry is going to "give every encouragement for those machines to make attempts on World's Records this year"—that is to say, if it is going to risk having machines which it has already bought smashed up in attempts to break records—the Air Ministry must have found some convincing, or at any rate very plausible, argument to put up to the Treasury officials.

It occurs to one that quite possibly that particular section of the Air Staff which is concerned with Operations in air warfare, and so is concerned with the choice of the types of machines with which the R.A.F. is to be equipped, must at last have awakened to the fact that the genuine high speed machine has a definite value in warfare.

What is a Scout?

One very seldom has any criticism to make on the Air Staff, for taking it all round the policy of the Staff is above criticism—albeit some of its staff methods, let alone the general staff work of R.A.F. units, would shake the Staff College at Camberley and the General Staff at the War Office to the core if similar methods, or lack of method, were introduced to the Army. But on this question of speed machines one has felt for years that the Air Staff was either obtuse or dilatory.

Before the War 1914-18 we had an idea that scouting would be done by high-speed aeroplanes. And so our fastest single-sea aeroplanes were called scouts.

But in the early days of the War we found that the fastest machines had to be used for fighting purposes. The result was that although they were still called scouts they never did any scouting,—a misfortune which was also partly explained by the fact that the most brilliant single-seater pilots, although some of them were very good fighting men, knew nothing whatever about military affairs and so were themselves perfectly useless as scouts. Consequently even to-day one may see in the reports of young officers leaving Flying Training Schools the remark "would make a good scout pilot," meaning simply that the young gentleman handles a fast aeroplane well, regardless of whether he has the slightest intellectual aptitude for scouting.

Scouts in the Next War.

One's own personal opinion, which may not be worth very much, though one can claim to have been right in a few forecasts during the last fifteen years, is that in the next war the real scouting will be done by scout machines. If, as one believes, we are going to have a really cheery open war, ranging all over the plains of Central Europe, the type of machine that used to do the scouting in the late lamented tribal conflict will be perfectly useless for anything.

In those days we seldom sent aeroplanes looking for information for more than 50 miles behind the fighting line. though on occasion trips may have been made for 100 miles over enemy territory. Most of the scouting was done with the object of discovering troop movements at points where units were detrained to march to the fighting line or at junctions where troop trains or supply trains were switched to different sectors of the line. And the scouting was done with machines that had a top speed of about 120 miles an hour.

The so-called scout machines, which were a trifle faster, were simply single-seat fighters and were used either for dog-fights with enemy fighting circuses with the object of obtaining command of the air, or else they were used for protective escorts for artillery observation machines or bomb raids.

Now, machines with a top speed of 120 or 130 miles an hour, or even 160 miles an hour, are not going to be very much use as scouts in a war in which there will be no trench line and in which the fighting area will waver backwards and forwards anything between 50 and 100 miles in a day,—thanks to the use of mechanical transport where the terrain permits, and to the use of cavalry, used as what we miss-call mounted infantry, in country where mechanical transport cannot operate.

In such a way infantrymen on their own flat feet will not stand a dog's change against mechanical implements of war or against horsemen properly armed with high-speed machine guns and light quick-firers.

Cavalry armed with modern machine guns, such as the latest Vickers and Lewis, and the Beardmore-Farquhar, and the latest American Remington and Browning would make hay of any possible infantry formation. Therefore infantry can only be used to hold strong points composed of immens earthworks such as can be made impregnable to the weapon of mechanical warfare.

Therefore anything in the nature of troop movements i mass can only take place some hundreds of miles behind th actual fighting area. And to detect those movements the onl aeroplane that can be any use is a machine with a speed o something well over 200 miles an hour.

What will be wanted will be an aeroplane which can g to a point 250 miles from its starting place and back agai inside two hours. And it must bring back with it photo graphic records of what it has seen on the way.

That is to say, the scout of the next war must be some thing very like a Pulitzer Trophy Racer, fitted with an auto matic camera which will develop and print its pictures o the homeward journey. Such cameras have already bee devised so there is no difficulty about that.

Of course the radio experts at the Air Ministry will argu that we can do just as well by having a machine with top speed of 125 miles an hour which will get to its objectiv in two hours and send its report back by wireless. One woul merely point out that a machine with a speed of anythin under 200 miles an hour will simply be butcher's meat to an decently equipped enemy air force, much as the wretche B.E. type biplanes evolved by the Royal Aircraft Factor became known as Fokker-fodder in 1915.

Speed versus Climb.

Just by way of a little friendly advice one would like t impress upon the Air Staff the fact that when they do secur "a number of high-speed machines and engines" they mus take excellent care that the assorted experts of the technic departments are not allowed to interfere with them. The re scout of the future must depend entirely upon its speed fo its safety. It need not have any ceiling worth mentionin

If it can get up to 15,000 feet, or say 17,000 at the utmos that will be quite enough. Actually it would be very muc safer doing 250 miles an hour a couple of hundred feet off th ground than it would be doing 150 or 160 miles an hour at 20,00 feet. Low down it will be practically impossible to hit fro the ground, and it will be very much more difficult to se from other aircraft at any considerable height above the ground And it is not going to have to cross Alps or anything that sort, so there is no need for it to have a high ceiling.

It need not have any guns, because a real high-speed sco is not sufficiently manœuvrable for a fighting machine. A it really needs is speed and a camera. And if we get th we shall have a real air scout, which we have not got yet.

The Pursuit Ship and Interceptors.

Naturally from the speed machine we shall develop oth quite fast machines. The Americans have got one end the idea in what they call their pursuit ships, that is, singl seat fighters which are fast enough to catch anything el that is in the air at the present moment.

Some of our wiseacres in the technical departments of th Air Ministry say that the American pursuit ships, such the Curtiss and the Boeing, are no good because they are fast that they cannot manœuvre. As a matter fact one h seen Curtiss P.W.8s doing manœuvres which would be anything one has seen in this country so far.

Eighteen months ago one saw a P.W.8 dive and then zoo almost vertically upwards, do two rolls while on the upwa path and then fly perfectly naturally off the top of the secon roll. The American Army specification calls for a factor safety of twelve to one, which possibly explains how such manœuvre is possible and safe.

And these P.W.8s, and their successors of the P.1 typ have definitely been evolved from the Pulitzer Winner So the Americans have thoroughly justified their ow "considered policy of high-speed development."

We in this country, not having attained to the colossa speeds of the American pursuit ships, are content to discu what we call interceptor fighters. Not having the speed t go for altitude. And apparently we do in fact reach heigh with our single-seat fighters which the Americans do n reach, except, of course, with their height-record breaker Moreover our fighters put up a very respectable speed those heights, which are anything up to 30,000 feet.

One says that without forgetting for a moment that th actual altitude records for machines built purely for high flyi have been held for some years by the French and American Nevertheless our Service fighters are probably capable fighting at a greater height than those of any other natio

The idea is apparently that when we are in fear of a bom raid we shall send our fighters up to sit there and intercep enemy bombing machines. But defence is the worst form defence, except when one is hopelessly out-classed or ou numbered (*vide* von Clausewitz.)

Very probably machines of this purely defensive type w be needed in the next war to protect headquarters and a munition dumps and so forth. But in any well-organised a force they should form quite a small minority of the tot equipment as compared with the number of actual hig


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speed pursuit ships designed to chase and bring down the enemy's fighters and bombers. For attack is always the best form of defence.

High-Speed Bombers.

Another thing that the Air Staff must not forget is that from the speed machines we ought to develop high-speed bombers. Mr. Fairey has shown what can be done in this direction by producing the Fairey Fox. Having produced the Fairey Fawn, a thoroughly good aeroplane which goes a long way in a long while, he proceeded, in spite of the best efforts of the Air Ministry experts, to produce the Fairey Fox, which carries exactly the same bomb load as the Fawn for exactly the same distance, and does it in very little more than half the time.

At the present moment the Air Staff's whole theory of long-range bombing strikes one as being about as wrong as it can possibly be. Our day bombers are not so bad, because they are intended to fly very high at quite a respectable pace. But even they are not as fast as they ought to be, and they are so loaded down with wireless gadgets and guns and things that they do not carry the useful load of petrol and bombs that they very well might if the tactical scheme were different.

It is all very fine to argue that a close formation of armed bombers can fight off pursuit ships. But a close formation of big machines, even at 20,000 feet or so, is a mighty easy mark for good anti-aircraft gunnery. It would be much better to adopt as a principle the one-man one-machine one-bomb idea, and provide long-range fighting escorts which would carry machine-guns and ammunition in place of bombs.

The more the bombing fleet is split up into small units, either fighters or bombers, the less is the loss when one unit of the fleet is brought down. And the navigation to the objective can be done by formation-leaders carrying a navigator apiece and a smaller bomb.

Night Bombing Fallacies.

The general idea of a night-bombing scheme, which seems to apply equally to all nations, strikes one as being even more futile than the day-bombing schemes. Everybody seems to be building vast multiple-engined craft carrying thousands and thousands of pounds, weight of bombs and enormous crews of navigators and gunners and spare pilots and all the rest. And these machines have a maximum speed of about 90 miles an hour with a cruising speed of somewhere about 70 or 75 m.p.h

Now these night-bombers depend entirely on being able to get to their objective in the dark. And one would merely ask what sort of a chance a machine with a speed of 75 miles an hour has of getting anywhere in the dark and back again in the dark during a short Summer night in Northern Europe.

During the Summer there are only about four hours of even approximate darkness and that means that the slow night-bombers can only reach a point 150 miles behind the enemy lines, if they are to get back again in darkness. As one has already pointed out, the fighting line in open warfare may vary 100 miles or so in the course of a day. Therefore such machines might very well spend most of their time in the air before they actually reached enemy territory at all.

Nothing could very well be sillier than building a machine which carries petrol which will keep it in the air for twelve hours if during those twelve hours it is not going to reach any point which is worth while,—at any rate with any hope of getting home again afterwards.

Moreover, if these machines bump into a forty-mile-an-hour head wind, as did the fleet of German airships which made the last raid on England in 1918 and run out of petrol before they could get home, they are only going to make 30 miles an hour over the ground and so would stand no chance whatever of reaching their objective.

Besides that, their ceiling with full load is so low that they cannot hope to get out of the range of searchlights and anti-aircraft guns even in moderately bad visibility. And they are so slow that when once they are spotted they are absolute sitters for quite moderately skilful anti-aircraft gunners.

Obviously there is no possibility of launching an enormous fleet of these vast machines. They cost too much in labour and material to build, and they take up too much room on aerodromes. Also, the bringing down of one such machine means making quite a big gap in the bombing fleet.

In fact the one-man one-machine one-bomb principle applies just as much to night bombing at it does to day bombing. And there is no earthly reason why night-bombing machines should not be just as fast as day-bombing machines.

Of course a certain type of armchair aviator will object that fully-loaded fast machines cannot be landed slowly in the dark as can the big slow bombers. The answer to that simply is that in the first place, with proper design of control surfaces and with properly designed wings, it is possible to put a fast machine down slowly. Secondly, when a bomber has got to land it is not going to land with all its bombs on board. It will have got rid of all its bombs and most of its petr before it has to land.

There is of course the possibility of an engine cutting o just as a heavily-loaded bomber is leaving the aerodrom but that is the fortune of war. And anyhow with prop aerodrome arrangements a fully loaded bomber ought to b able to get down without killing anybody.

Making Up Lost Time.

Naturally there is a good deal to be done before we ca produce really high-speed machines. That is why this polic of "high speed development" is so much to be commende We seem to be quite a long way behind the Americans i our ideas of how high speed aeroplanes ought to be designe A good many of our aircraft firms would be better off if the chief designers were gently gathered to Abraham's boso Most of their ideas of what is and what is not a corre streamline for really high speeds—that is to say over 2 m.p.h—seem to be hopelessly wrong.

As the result of experiments in wind tunnels with very lo air speeds they have got the idea that the shape of the fro of a streamline body does not matter much so long as t air can bounce off it and is given a nice clean lead aft. B for modern speeds these ideas are all wrong.

Our highbrow scientists forget that air is about as stick as treacle in spite of its elasticity. The consequence is th at 200 m.p.h. and upwards the air is so compressed in fro of the various parts of an aeroplane that it actually has to b cut, as with a knife. And the machine goes through it s fast that the air has no time to bounce and come back.

The result is, as may be seen by those who take the troub to study in detail the designs of the high speed Curti machines, the actual nose of the fuselage and the leadin edges of wings and struts are much more important than th trailing edge. Which is a complete reversal of all our o ideas.

In fact the modern high speed aeroplane has to be treate much more as a projectile than as a streamline body. Th pointed-nose rifle bullet, in spite of its flat end, has a fa greater speed and consequent range than has the blun nosed bullet. Presumably if a bullet could be made with pointed tail as well as a pointed nose it would be faster stil if, at the same time it could be persuaded to maintain i directional stability. But the pointed nose is far mo essential than the pointed tail. And that appears to be o of the things that European designers of speed aeroplan have not yet grasped.

The Compressed Air Tunnel.

Whoever made the discovery first one does not know, b the Americans confirmed the theory in a new wind tunn they have got, which produces quite a high air speed with t air compressed to something like three atmospheres. O believes that the idea of a compressed air wind tunnel wa first evolved by a German aerodynamic scientist who wa imported to America very shortly after the end of the W in 1919 by the U.S. Advisory Committee for Aeronautic Quite a number of amusing things have been discovered i that compressed air tunnel which quite upset the notions most of the European scientists, so-called.

One heard recently that unfortunately this compressed a tunnel has blown up owing to the air being over compresse by its too enthusiastic operator. Still presumably by now has been rebuilt and probably the Americans are discoverin more things to upset our ideas of high speed aircraft.

One believes that all these things have been duly reporte to the Air Ministry, and they should have been distribute for the use of Aircraft Industry. But one finds that the and many other even more important facts, are not known i the Trade. So presumably the Air Ministry experts kee them to themselves, for fear lest the Trade should know t much. Or else the experts are so self-satisfied that they not believe that any good can come out of America. Or els as is quite likely, they are too stupid to understand.

The Air Staff's Chance.

One can only hope that the Air Staff, on whom ultimate depends the adoption or rejection of any particular type aeroplane for the R.A.F., will get a firm hold of the idea th speed will account for more than anything else in the ne war. Heaven knows how many millions of pounds we ha spent and are spending on slow machines which will be pe fectly useless when the war gets going.

If the Air Staff does insist on having speed machines, will of course meet with all sorts of objections from the tec nical folk. There will be the old objection about lack manœuvrability. And there will be the objection that gunner cannot fight his gun at 200 miles an hour, regardle of the fact that nobody wants him to do so, and that if gets mixed up in a dog fight the pilot will have to slo down to about 90 m.p.h.

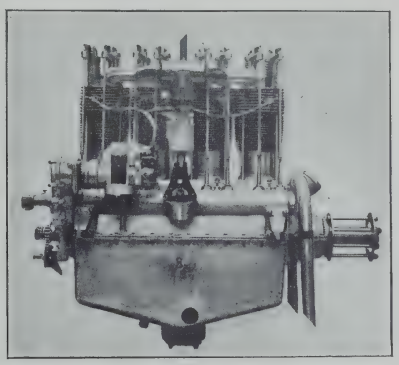
Also, this objection will be raised regardless of the fact th a proper gun-turret has already been designed which can turned at the will of the gunner in any direction,—the for of the wind being actually used to turn the turret, in whic

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120/140 h.p. "AIRDISCO" Aero Engines.

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WITHOUT A SINGLE INVOLUNTARY STOPPAGE.

We have received a letter from the Chief Instructor of the Newcastle-upon-Tyne Aero Club, Major L. A. Packman, referring to the reliability of the three A.D.C. "Cirrus" engines in use by the Club, which letter we reproduce below :



Cramlington Aerodrome,
Cramlington, Northumberland,
12th March, 1926.

A.D.C. Aircraft, Ltd.,
Regent House, Kingsway,
London, W.C.2.

Dear Sirs,

Having run three of your 27/60 h.p. "Cirrus" engines for an aggregate of four hundred and fifteen (415) hours without a single involuntary stoppage I feel it is incumbent upon me to acquaint you of the fact.

Engine reliability is of course at all times of the utmost importance but its value is especially enhanced when used in a training machine, where confidence in one's engine is of inestimable value to a pupil.

Your achievement in producing a Light Aeroplane Engine of such outstanding merit is, I consider, worthy of the highest praise.

Yours sincerely,

L. A. PACKMAN, Major (Retired),
Instructor to the Newcastle-upon-Tyne Aero Club.

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the gunner is totally enclosed. If the gunnery folk at the Air Ministry happen to be interested in this idea one can put them in direct touch with the designer—a man of long experience, who for the moment is keeping the idea to himself.

The Air Staff will also be told that these high speed machines are dangerous to land. That can be got over by proper wing design plus proper slots and ailerons.

Nearly all these unfortunate people who are being killed week by week in the R.A.F. might have been saved if only the Air Staff had trodden sufficiently firmly on the technical people and had insisted on the development of proper anti-stall, and ante-stall and post-stall, controls.

The Air Staff generally knows what it wants and in time it gets it. But not being technical people the Staff are rather apt to stand in awe of the Supply and Research Departments, instead of merely putting their feet down heavily and saying what they want and meaning to get.

The incident of the Fairey Fox, and the latest Fairey Firefly, and the recent performance of the Bristol Jupiter and a few things of that kind have rather shaken the self-esteem of the Supply and Research Department. Therefore one hopes that the Air Staff will now awake to the possibilities of real speed machines equipped with proper controls, and that they will not only insist on having accelerated aeroplanes but will also insist on the acceleration of the operations of the technical people.—C. G. G.

THE ARRIVAL OF A RIVAL.

A welcome visitor to this country at the moment is Mr. Lester D. Gardner, proprietor, publisher and prime mover of *Aviation*, New York, the leading and oldest American aeronautical publication. Mr. and Mrs. Gardner arrived on the dry *Leviathan* on Friday, Mar. 26. They are spending a few days in England before starting an aerial tour of the Continent of Europe.

Mr. Gardner has only had time to call on a few personal friends and official people, but he hopes on his return to England in a couple of months' time to make the acquaintance of the British Aircraft Industry. When he has done so one hopes to be able to induce him to write his impressions of European aviation for the benefit of THE AEROPLANE.

Should he consent to do this one feels sure that British Aviation will benefit thereby. One can promise Mr. Gardner a free hand in THE AEROPLANE, subject only to the English law of libel, and as he is a keen observer and a good judge of character there is some hope that the British Aircraft Industry may see itself as others see it.

Meantime one wishes Mr. and Mrs. Gardner a thoroughly enjoyable holiday on the Continent. They have worked together for many years, primarily for the benefit of American aviation but actually for the good of flying all over the World, and have had no real rest. They will probably have little rest during this holiday but after all change of occupation is the best possible rest.—C. G. G.

A NEW LIGHT AEROPLANE ENGINE.

It is said that Armstrong-Siddeley Motors Ltd. are experimenting with a new radial air-cooled engine for *The Daily Mail* competition. It is called the Genit and has five cylinders. It is said to weigh nearly the full 170 lbs. allowed by the rules and to develop about 70 h.p. No further details are available at the moment.

IMPORTANT LECTURES.

The Marchese di Pinedo will read a paper in English to the Royal Aeronautical Society on "A 35,000 Miles Flight" at 6.30 p.m. on Thursday, Apr. 8, at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

Captain G. T. R. Hill's lecture on "The Tailless Aeroplane" will be given at 6.30 p.m. on Thursday, Apr. 22, also at the Royal Society of Arts.

THE R.Ae.C.'S NEXT HOUSE DINNER.

The Royal Aero Club will hold its next Monthly House Dinner at the Club House on Wednesday, Apr. 14, at 7.15 p.m. Sir Samuel Hoare, the Secretary of State for Air, will open the discussion on "The Future of Flying." The Duke of Sutherland will be in the Chair.

The number of diners is limited to 60. Dinner will cost 6s. Morning dress will be worn. Members wishing to attend should notify the Secretary of the R.Ae.C. well in advance.

A WEST-END MARCONI OFFICE.

A new West-End telegraph office was opened on Monday, March 15, by Marconi's Wireless Telegraph Company Ltd. at 20, Duke Street, Piccadilly, where telegrams may be handed in for transmission by high-speed wireless telegraphy to France, Spain, Austria, Switzerland, Canada, the United States, Bulgaria, Yugo-Slavia and other parts of the world. As it is centrally situated the new office will conveniently serve the telegraphic requirements of commercial houses, residents, hotels and visitors to the West End. It will be open from 9 a.m. to 11 p.m. on week days. The telephone number is Gerrard 7249.

AN INTERNATIONAL SCANDAL.

The following letter from the Fokker firm is of internatio interest :—

Sir,—Referring to a publication in THE AEROPLANE, V XXX, No. 11, of Mar. 17, 1926, concerning "Aeroplanes Roumania" and to similar items which appeared in Press, all of which more or less insinuate a certain corr tion in the purchase of the aeroplanes in question, we beg give you below an explanation of the matter, in order to to rights the false rumours which have been spread c cerning this affair.

All the aeroplanes we supplied to the Rouman Government were brand new and built in our Amsterd Works.

The engines only (300 h.p. Hispano-Suiza) have been s plied to us by the Aircraft Disposal Company of Lond They were not brand new in the sense that they came direc from the manufacturers, but they were unused. This c dition was clearly stipulated in the contract.

The machines were not only fully approved by Delegates of the Roumanian War Office at Amsterda where all technical tests required by the contract w carried out to the satisfaction of the Mission, but also Committee in Bucharest, which had to take delivery of planes in the last instance and who made all possi objections and difficulties infringing the conditions of contract, had finally to acknowledge the excellent quality performances of the machines, which fact was laid down a protocol.

Nevertheless the Roumanian Government refused to the second half of the invoice-amount, pretending that engines were not new, although the contract clearly sta that they had to be "new, i.e., unused," and although War Minister knew their provenance before signing agreement.

The rumours that the tests at Amsterdam should carried out with other machines than those shipped Roumania, are only distributed with the purpose to prev the final acceptance of the planes for certain reasons.

The machines in question were built for another cou and were already paid for; they were packed in seawor cases and only waited for shipment. In the interest of Roumanian Government, who was badly in want of 50 sin seater fighters for immediate delivery, the aeroplanes w purchased back by us with great difficulties, mainly sisting in the high price the owners required for th Finally we succeeded in getting the planes back at a p which the Roumanian War Minister was willing to pay.

Not until the Roumanian Delegates arrived at Amsterd the cases picked out by them were opened and the tests w carried out with the machines thus designated. All requ ments were not only fully answered to, but partially t were even surpassed.

Also the allegation that our representative in Bucha should have received a large sum of money for distribu among four persons who were concerned with the placin the contract is absolutely deprived of any foundation.

Meanwhile this has been confirmed by the fact that representative, after having been arrested, has been se liberty after examination of the question by the Roumai Court of Justice. The president of this Court formally clared that our representative was absolutely correct in his dealings.

The reasons for this chicanery against our firm are following :—

Originally it was intended to establish a Fokker fac in Roumania. This scheme has not been executed du the very strange attitude of the Roumanian Indust Minister. Now the groups and persons interested in establishment of another foreign aeroplane factory Roumania try with all possible means and intrigues to vent the Fokker planes from being accepted and introdu in their country, because they fear that if the planes have proved their quality, the original scheme might still realised. To reach their aims they even have not hesit to cast reflections on the Military Mission who tested planes in Amsterdam. However, meanwhile the C Martial has acquitted the accused officers.

Moreover, certain people try, for interior political reas to cry down the Fokker planes, as they hope to compro in this way certain high personalities. And finally the sonal ambitions and envy of some high officers are playe by the hidden wire-pullers who are interested in a scar

The following fact throws a typical light on the metho certain Roumanian authorities :—

Whilst aeroplane manufacturers of other foreign coun are freely allowed to demonstrate their new types of craft, it was impossible for our firm to obtain an im licence for our two-seater reconnaissance machine, which we offered to demonstrate at our expense and wit any engagement for the Roumanian Government.

(Signed) for the N. V NEDERLANDSCHE VLIEGTUIGENFABR

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The De Havilland "MOTH" has been designed entirely in the light of modern experience, and fulfils in every respect modern training requirements. Its controls are light, effective and straightforward at all speeds. It is fitted with a 4-cylinder air-cooled engine, which is as reliable as that of an automobile. Its fuel and oil consumptions for school work are less than four gallons and one pint per hour respectively.

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THE ROYAL AIR FORCE.

The London Gazette

Mar. 3.

General Duties Branch.—Flt. Lt. H. A. Hamersley, M.C., is granted a perm. comn. in this rank (Jan. 1). W. I. N. Strong is granted a prm. comn. as a Plt. Off. on probation with effect from and with seniority of Mar. 13.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—D. T. H. Hooke (since invalided) (Jan. 14, 1925); G. N. J. Stanley-Turner (Jan. 31); C. H. Morgan, S. F. Bell (Feb. 8); I. W. C. Mackenzie, R. H. Holmes, W. L. McLaren, W. F. Parkinson (Feb. 28). Plt. Off. on probation C. W. Martin is confirmed in rank (Feb. 8).

Air Commodore F. V. Holt, C.M.G., D.S.O., is placed on half-pay, scale B, from Mar 26 to Mar. 31 inclusive.

Plt. Off. E. T. Wiltshire resigns his S.S comn. (Feb. 7). Flt. Lt. C. D. Fuller relinquishes his S.S. comn. on account of ill-health, and is granted permission to retain the rank of Sq. Ldr. (Mar. 7). Flg. Off. W. C. Adams relinquishes his S.S. comn. on account of ill-health (Mar. 24). Flg. Off. J. N. Jacques (Lt., R.W. Kent Regt.) relinquishes his temp. comn. on return to Army duty (Mar. 11).

Stores Branch.—Flt. Lt. R. F. Osborne is granted a perm. comn. in this rank (Mar. 24). The following Plt. Offs. on probation are confirmed in rank (Feb. 10):—D. J. Divett, E. J. Fishenden, P. J. Mote.

Medical Branch.—Flg. Off. R. L. C. Fisher, M.B., is granted a perm. comn. in this rank (Mar. 24). M. J. Marren, M.B., is granted a S.S. comn. as a Flg. Off., for three years on the active list, with effect from and with seniority of Mar. 1.

Reserve of Air Force Officers.—C. E. M. Pickthorn, M.C., is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Mar. 23). S. Summerfield is granted a comn. in Class AA, General Duties Branch, as a Plt. Off. on probation (Mar. 23). Flg. Off. J. S. Snedden is transferred from Class A to Class C (Mar. 3). Flg. Off. W. McL. Hirons resigns his comn. (Mar. 12).

Princess Mary's R.A.F. Nursing Service.—Miss Gwendoline P. Faulkner resigns her appointment as Sister (Mar. 2).

Mar. 26.

General Duties Branch.—The following are granted S.S. comns. as Plt. Offs. on probation with effect from, and with seniority of, Mar. 13:—R. A. Barnett, B. J. Bushe-Caryesford, G. Carleton, J. Constable-Roberts, J. W Duggan, I. J. Fitch, R. S. Fleming, J. H. Harris, H. P. Hudson, R. J. Legg, A. A. Leslie, N. MacLeod, R. R. Nash, R. G. Pace, E. J. Pentland, N. C. Pleasance, N. C. Ross-Roberts, G. H. Shaw, S. R. Sherman, M. A. Smyth, L. R. Stokes, G. A. V Tyson, E. F. Wain.

The following Plt. Offs. on probation are confirmed in rank:—H. C. Macphail (Mar. 17). W. A. Andrews, W. E. Barnes, J. Blackmore, W. G. Campbell, H. C. G. Dauncey, J. M. Hunter, J. F. Lawn, H. G. Loch, L. H. Mason, T. F. Moloney, C. M. Peabody, R. T. Read, G. L. G Richmond, J. T. Riggs (Mar. 26); K. Garston-Jones, S. H. White (Mar. 28).

Stores Branch.—Plt. Off. on probation E. H. Broad is confirm in rank (Feb. 10).

R.A.F. Cadetships.

The Air Ministry announces that the next examination candidates for entry as flight cadets to the R.A.F. Cad College, Cranwell, in September, 1926, will begin on June On this occasion not less than 35 cadetships will be offere Forms of entry, which can be obtained from the Secretar Civil Service Commission, Burlington Gardens, W.1, will n be accepted in any circumstances later than May. 6.

All candidates must be fit and willing to fly and be between ages of 17½ and 19½. With the exception of those nominated by t Air Council on the recommendation of Headmasters, they are quired to produce school certificates A or B, obtained by passi certain specified examinations, before their candidature is approv

On passing successfully out of Cranwell, flight cadets are grant permanent commissions. They have before them a life career wi good prospects of rising by their own efforts to the highest ran There is no question of their compulsory retirement on the grou that they have become too old for service as pilots. The work offe great scope both in its military and in its technical aspects to you men of ability, and facilities are given to officers to specialise engineering, wireless telegraphy, air gunnery and other subjects. T responsibilities of the Royal Air Force in India, Iraq, Palesti Egypt and the Mediterranean provide opportunities of serving abro but a tour of overseas service does not exceed five years.

The total cost to a parent of putting his son into the Royal A Force through Cranwell is about £250 for the two years' course. F flight cadets who are successful in obtaining prize cadetships or w are eligible in respect of their father's service in the fighting forc the total cost of the two years' training is considerably less.

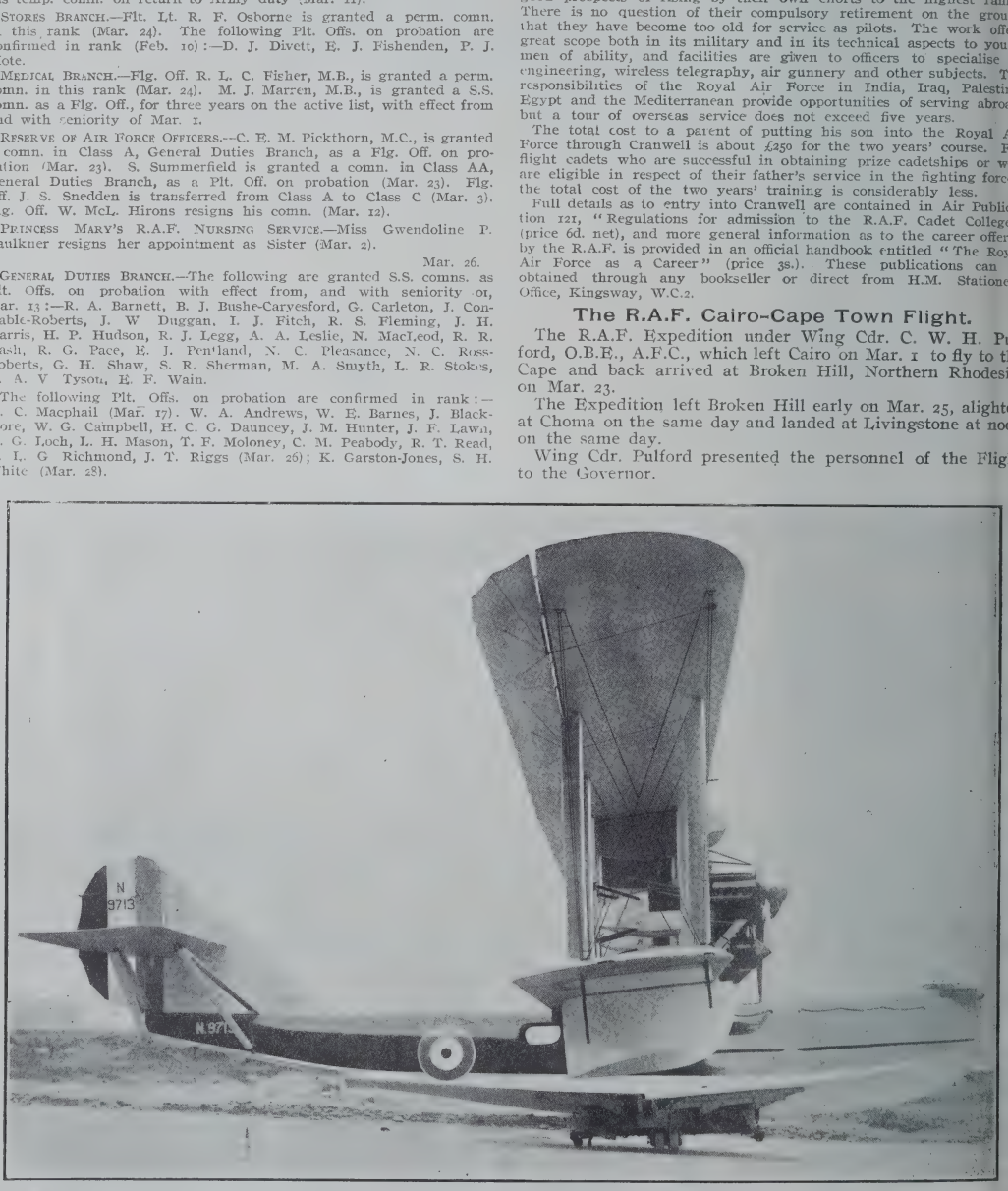
Full details as to entry into Cranwell are contained in Air Publi tion 121, "Regulations for admission to the R.A.F. Cadet Colleg (price 6d. net), and more general information as to the career offer by the R.A.F. is provided in an official handbook entitled "The Roy Air Force as a Career" (price 3s.). These publications can obtained through any bookseller or direct from H.M. Station Office, Kingsway, W.C.2.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. Expedition under Wing Cdr. C. W. H. Pu ford, O.B.E., A.F.C., which left Cairo on Mar. 1 to fly to t Cape and back arrived at Broken Hill, Northern Rhodesi on Mar. 23.

The Expedition left Broken Hill early on Mar. 25, alight at Choma on the same day and landed at Livingstone at no on the same day.

Wing Cdr. Pulford presented the personnel of the Flig to the Governor.



THE LAST SHOT.—The latest Kingston flying-boat (Napier engines) with new type hull, built by the English Electric Co. Ltd. to the designs of Mr. W. O. Manning, and delivered to the R.A.F. on the day on which the closing-down of the firm's aircraft works was announced.

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R.A.F. SPORTS AND PASTIMES.

R.A.F. v. Gloucester:—The R.A.F. were beaten by Gloucester at Gloucester on Mar. 18, by three goals and two tries to one try. *The Times* account of the game states :—

Gloucester gained an early advantage, Loveridge scoring a try, which Millington converted. Before half-time the home side increased their lead through tries by Crowther and Brown. After Triggs-Herbert had left the field through an injury Harvey gained a try for the R.A.F. Matters were fairly even for some time after the interval, but at length Gloucester scored again, Loveridge using the blind side of the scrummage to gain a try, which Millington converted. The Air Force tried hard to reduce their arrears, but the Gloucester defence held out, and before the close Hughes got in again, Millington placing another goal.

The Rugger Cup.

Upavon *v.* Manston.—The replay of the semi-final between Upavon and Manston was played at Uxbridge on Mar. 19 and resulted in a win for Upavon by a penalty goal and a try to nothing. There was a very poor muster of spectators at the Stadium, but the enthusiastic few saw a very fine game indeed. The passing on both sides was of a very good standard and if the tackling was invariably too high it was certainly ferocious. The first part of the game was fairly even, with a lot of free-kicks awarded to both teams. From one of these about a quarter-of-an-hour from the start Sq. Ldr. Russell dropped a goal. Five minutes later he had to retire with a damaged left hand and Manston began to attack in earnest.

Upavon were driven back onto their own line and put up a grim fight. Manston were unlucky not to score then. and one of them had actually dropped a goal when he was called back for a scrum. The Upavon backs had to touch down once, and twice one of them saved with a good long kick into touch.

Sq. Ldr. Russell came back in the second half with a copiously-bandaged hand which did not seem to inconvenience him, as his fielding and handling were as sure as ever. He was splendidly backed up by his stand-off half, who never made a mistake. Upavon improved all round in the second half and some very pretty passing sent the right wing man in for a try in the corner which was not converted. The forwards came into action in the last half-hour, Manston getting the best of the scrums and Upavon shining in the loose. The tackling and touch-finding were keener towards the end and there was no more scoring.

The Final will be played at Uxbridge on Monday, Mar. 29, between Upavon and Henlow.—C. M. Mca.

Association Football.

R.A.F. v Civil Service:—The Civil Service beat the R.A.F. at Chiswick on Mar. 17 by three goals to nil. An injury to AC. Bishop handicapped the forwards in the first half but the R.A.F. were allowed a substitute in the second half. The three goals were all scored in the first half. The second half was more equal and some hard shots at goal were splendidly saved by the R.A.F. goalkeeper.

The R.A.F. Cross-Country Championship.

L-AC. S. Ferris, the winner of last year's British "Marathon" Race, finished first in the Royal Air Force Cross-Country Championship, held over a course of a little more than five miles, at Uxbridge on Mar. 17, and beat the holder, AC. F. W. Turner, by 50 yards. AC. E. Stone was third. Ferris's time was 32 min. 30 secs.

Uxbridge won the team championship again as they had the first two men and finished their scoring eight in the first 47 places, scoring 101 points, with Halton, the second team, 176 points behind. The junior team competition was won by Calshot, who scored their third successive victory, with 204 points against the 323 points of Martlesham.

The Junior race is confined to stations with strengths of 500 or less. The first 12 men home were :—

L-AC. S. Ferris (Uxbridge), 1; AC. F. W. Turner (Uxbridge), 2, AC. E. Stone (Kenley), 3; L-AC. Tym (Manston), 4; Cpl. O. C. Clarke (Upavon), 5; L-AC. Hester (Uxbridge), 6; Flg. Off. G. H. P. Carter (Uxbridge), 7; L-AC. G. W. Goodall (Uxbridge), 8; AC. Mulliner (Uxbridge), 9; AC. Lang (Halton), 10; AC. W. Fahy (Kenley), 11; Flg. Off. C. J. Stone (Manston), 12.

The team placings in the Senior race were :—

Uxbridge (holders), 101 points, 1; Halton, 277 points, 2; Manston, 321 points, 3; Cranwell, 476 points, 4; Henlow, 508 points, 5; Flowerdown, 960 points, 6; Netheravon, 1,065 points 7.

The team placings in the Junior race were :—

Calshot (holders), 204 points, 1; Martlesham, 323 points, 2; Spittlegate, 353 points, 3; Bircham Newton, 358 points, 4; Upavon, 417 points, 5; Kenley, 432 points, 6.

Boxing.

The winners of the Army Team Boxing Championship (2nd Batt. The Loyal Regt.) will meet the R.A.F. Station, Manston, winners of the Air Force Team Championship, in a match to be decided at Manston on April 22nd.

It is hoped to make this meeting between the champion teams of the two services an annual event.

Boxing at Heliopolis.

The individual Boxing Championships were concluded on Mar. 5 at Heliopolis.

The boxing opened with the Semi-Finals of the Leight-weight between Cpl. Davidson (A.D.) and L-AC. Leach. This resulted in a win on points for Cpl. Davidson. The other Semi-Finalists in the Light-weight class were AC.1. Graham, No. 47 Sqdn., and L-AC. Isles (A.D.). There was some good hard hitting in this bout, which resulted in a win for Graham.

The Final of the Fly-weight.—Between AC.1. Robinson (4 F.T.S.) and AC.1. Rutherford (A.D.). This was cleanly fought, the competitors being very well matched, Rutherford winning on points.

F-S. Sallows, the R.A.F. champion, fought against AC.2. Allen in the Final of the Bantam-weight, and although it was obvious A Allen was out of his class, he fought a very plucky fight aga greater experience and talent and was knocked out in the sec round.

Final of the Feather-weights.—L-AC. Williams (Aboukir) versus A Cunningham (208). This resulted in an easy win for Williams.

Special Feather-weight Contest.—Between Army Champious, Chapman (R.H.A.) and Pte. Curran (Army Novices Champion, This was a very spirited contest and showed the type of boxers Army could produce; although Bdr. Chapman appeared to be the be man from the beginning, it was obvious that Pte. Curran exter him. Their boxing was good, the footwork especially being excell Pte. Curran got in some hard blows and at one time had he follo up one especially good right swing to the jaw he might have versed the verdict. Bdr. Chapman realised it was time he gave further openings and to avoid the risk of stopping an unlucky put Curran down for a count of 8. Curran was still helpless on ropes at the completion of 10 seconds and Bdr. Chapman won.

Final of the Welter-weight.—L-AC. Jones (A.D.) and L-AC. appeared in the ring. After a few seconds' boxing it was obvious Read was the better man, but was sparing his opponent. Referee cautioned the two competitors. They failed to improve were disqualified. The losers in the Semi-Final were well mat and L-AC. Gilmore (Aboukir) met L-AC. Alexander (Aboukir). was a most excellent bout and more than wiped out the regrett incident of the previous disqualification, although Gilmore had advantage of a longer reach and appeared to be the better Alexander took all he could give him and came back readily for m

Alexander furthermore was not contented to do all the taking, although severely hammered in the last round, there is little d that when Gilmore woke this morning he realised he had had a last night. Gilmore was declared the winner on points. Both men to be congratulated on fighting in a spirit which reflects the traditions of the Sport and showed how clean and good Service ing can be if the men in the ring are of the right type.

Final of the Middle-weight.—AC.1. Doulton (Aboukir), who had extremely heavy right, obtained the verdict over AC.1. Garner.

Final of the Light-heavy-weight.—AC.1. Thompson (208) beat L Brockwitz on points. Thompson was obviously trying for a knock but was unable to get it. Brockwitz could withstand it all.

Final of the Light-weight.—Cpl. Davidson (Aboukir) beat Graham (47) on points. There was very little to choose between t two men. Their boxing was quite good, but Graham was unabl follow up the advantages he sometimes gained.

The programme was brought to a conclusion by a special 4-r contest at Light-weights between Cpl. Surplice, 15/19th Hussars (A Champion, 1926) and Cpl. Johnson, 9th Lancers (Army Cham Palestine, 1926). In this contest the two Corporals were extre well matched and it was not until the last gong had sounded one had any idea how this fight was going. In both cases order of the boxing was very high, and although Cpl. Joh obtained the verdict one would imagine it was by a very small ma

Wing Cdr. Baldwin, D.S.O., O.B.E., was then introduced by Sq. Waller, and presented the prizes. In a very apt speech he pointed from the examples of boxing seen that evening, one would ima that foot slogging through the sands of Gaza and plying the da brush makes for a higher standard of fitness than plying the spar Although he did not wish in any way to discourage the R. boxers, he said it was quite obvious that they would have to lot of real hard training in order to give the Army a run for money in the Inter-Service Championships next month.

A Sealand Gathering.

The Annual Dinner and Social gathering of the Serjeants' No. 5 Flying Training School, Sealand, took place in the middl March. Among the guests was Sq. Ldr. R. S. Booth, A.F.C., who in command of the R.33 when she broke from her moorings at Pul and was blown across the North Sea.

F-S. P. Ridley, President, was in the chair, and over 120 men and guests were present. S-M. Longhead proposed the health of King and S-S-M. Taylor the health of the Commanding Officer Officers. Flt. Lt. Todd, responding, apologised for the unavoid absence of the Commanding Officer. Flt. Lt. Sparkes proposed Ladies, and the President proposed the Guests.

At the end of the dinner an interesting ceremony took place the local representative of the Birkenhead Brewery Company prese the Serjeants' Mess with a handsome silver Snooker Challenge Cup behalf of the Company.

A concert, a whist drive and a dance concluded a successful eve

The Halton Magazine.

According to the Easter number of the *Halton Maga* Brig.-Gen. Kentish, Chairman of the Olympic Games C mittee, visited Halton during the latter part of last Decer and expressed his surprise at the general upkeep and made of the space available for playing fields. He said he knew of no Station in the three Services so well equip in this respect as Halton.

The Old Haltonians' Association is now firmly es lished and its first report appears in this issue of the *Ha Magazine*. The membership has reached nearly nine hun and branches have been established at twenty-six R. Stations. The reports from the various branches show the Old Haltonians are holding their own in Station Sp

No. 4 Apprentices Wing now stationed at Cranwell be moved to Halton in September. In this connection Editor of the *Halton Magazine* states that the fusion of two schools of Technical Training for Aircraft appren would promote a co-operation and a pooling of ideas and e on behalf of Aircraft Apprentices such as could scarcel hoped for with separate schools so far apart.

The *Halton Magazine* also contains an interesting ar on parachutes, and some excellent illustrations.—C. M. M

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THE ROYAL AIR FORCE VERSUS THE ARMY.

R.A.F. v. Army:—The R.A.F. were beaten by the Army at Twickenham on Mar. 27 by a goal and two tries to nothing. The Air Force more than held their own, they had the better of quite two-thirds of the game but there was a lack of finish among the backs that prevented scoring. They were a little unlucky too. Two shots at penalty goals went wide and in the second half Flt. Lt. Rose went over after one of many splendid forward rushes but the try was disallowed as the Referee considered he himself had blocked the Army men. A fine straight run by Flg. Off. Chambers was stopped by an injury to one of the Army team. On the other hand there was no one in the R.A.F. team anything like as fast as the Army's two wing men, Lieuts. Cass and Bryan. Fortunately for the R.A.F. their activities were hampered by the hard work of the Air Force forwards in the scrum and the untiring speed, energy and resource of Sq. Ldr. Russell at scrum-half. Sq. Ldr. Russell was at the top of his form and outplayed and almost obliterated Lieut. Young, who won honour and glory in the International game at Bannockburn a week ago.

The R.A.F. forwards, with Flt. Lt. Chick in the van, got into their stride directly the game started and carried the war straight into the enemy's camp. This display of frightfulness did not worry Guardsman Rees, the Army full-back. He quietly took the ball away from them and kicked it into touch well over the half-way line. Guardsman Rees did that sort of thing all the afternoon. The Air Force attacked again with a fine run by Flt. Lt. Scott on the left wing but he was brought down and the Army recovered from the line-out. Flg. Off. Chambers broke away once or twice but practically all the movements by the backs were killed on the wings. The first half ended with no score.

The Army forwards showed more life in the second half and their three-quarters began to get the ball. The Air Force put up a desperate defence but Lieut. Bryan gathered well from a cross-kick by Lieut. Aslett and beating Lord Bandon, sailed in for a try. The place kick failed.

The R.A.F. pack then gave glorious battle. They swept everything before them in a series of mighty rushes. Twice they were held up for off-side or some such error of judgment and once Flt. Lt. Rose actually touched down. The hefty kicking of Rees saved the Army a lot of wear and tear and 2nd Lieut. Brownè, from a break-away by Lieut. Young, beat a rather exhausted side when he scored the second try. Rees converted. Lieut. Phillips scored the last try in the last three minutes.

The teams were :—

The Army.—Guardsman T. E. Rees; Lieut. E. E. E. Cass, Lieut. A. R. Aslett, Lieut. E. E. Down, and Lieut. G. J. Bryan; Lieut. A. T. Young and Lieut. R. M. Phillips; Lieut. C. K. T. Faithfull, Capt. B. M. Dunn, Cpl. D. Jones, 2nd Lieut. D. Turquard-Young, Lieut. P. E. C. Honeyman, 2nd Lieut. J. D. Clinch, 2nd Lieut. W. F. Browne and Lieut. H. R. Saunders.

The R.A.F.—Plt. Off. W. I. N. Strong; Flt. Lt. P. G. Scott, Flt. Lt. O. C Bryson, Sq. Ldr. C N. Lowe and Plt. Off. the Earl of Bandon; Sq. Ldr. J. C. Russell and Flg. Off. P. J. Chambers; Flt. Lt. J. S. Chick, Flg. Off. P. G. Chichester, Flt. Lt. T. Rose, Flt. Lt. G. H. H. Maxwell, Cpl M. G. Christie, Flg. Off. St. J. F. Wintour, L-AC. J. F. Hampton and Flg. Off. C. J. S. O'Malley.

C. M. Mca.



STOPPING HIM.—Flg. Off. O'Malley (R.A.F. Medica Service) bringing down Lieut. Bryan, the Army's fas three-quarter, with Flt. Lt. Chick ready to assist.

AIR AFFAIRS IN PARLIAMENT.

LIFE-SAVING SUITS.

In the House of Commons on Mar. 25, Colonel Day asked Secretary of State for Air the results of the recent experiments demonstrations of the new life-saving clothing; and whether it intended to supply such life-saving equipment to the Royal Air For

The Under-Secretary of State for Air: The recent demonstrati to which I think the hon. and gallant Member is referring, of cert flying clothing which would also keep the wearer afloat in the wa gave promising results, but a good deal of modification would necessary before the clothing could be considered suitable for Serv use. Two modified suits have been ordered, and these will be tes in due course.

Colonel Day: Can the hon Gentleman say how many differ kinds of suits were tested?

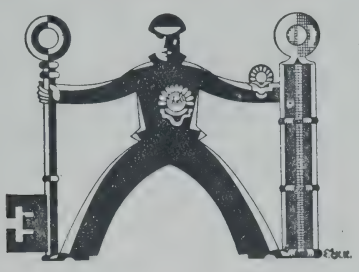
Sir P. Sassoon: Two suits have been ordered for testing purpo

MODEL AERONAUTICAL ENGINEERS.

The Committee of the Royal Aero Club has decided to extend offi recognition to the Society of Model Aeronautical Engineers fo further period of one year.



IN FULL CRY.—The R.A.F. Pack downing an Army player.



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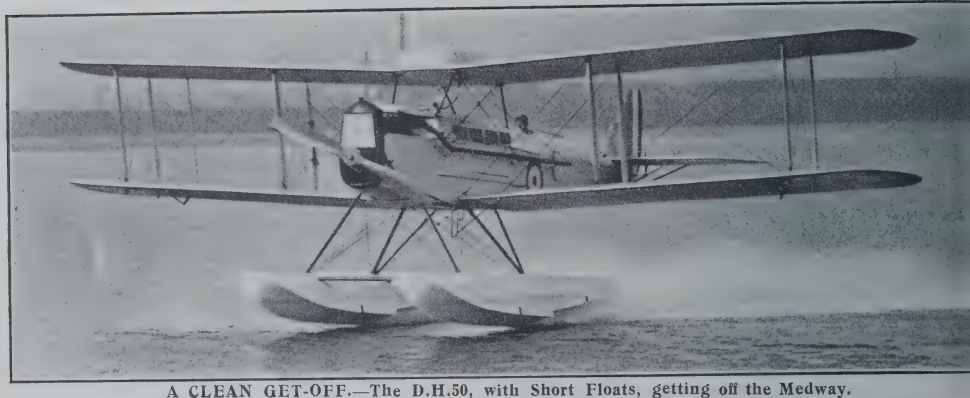
SHELL

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S.22.B





A CLEAN GET-OFF.—The D.H.50, with Short Floats, getting off the Medway.

THE D.H.50 SEAPLANE.

On Wednesday, Mar. 24, some interesting tests were carried out at Rochester when Sq. Ldr. R. S. Brown, the Australian Liaison Officer, inspected the D.H.50a aeroplane with rapidly interchangeable wheel and float undercarriages which has been built specially for the Royal Australian Air Force by the de Havilland Aircraft Company, Limited.

The floats have been designed and produced by Short Brothers in collaboration with the de Havilland Company and the results undoubtedly prove that the experiment has been fully justified. Both in performance and carrying capacity have expectations been exceeded and everyone present at the demonstration remarked upon the clean lines and workmanlike appearance of the " 50 " as a seaplane.

The undercarriage consists of two long duralumin floats with a pronounced vee-shaped bottom. In appearance they are similar to those of the Gloster III Schneider Cup racer.

The struts and bracing are extremely simple and of orthodox design, loads being taken up at the same points on the fuselage as in the case of the landplane.

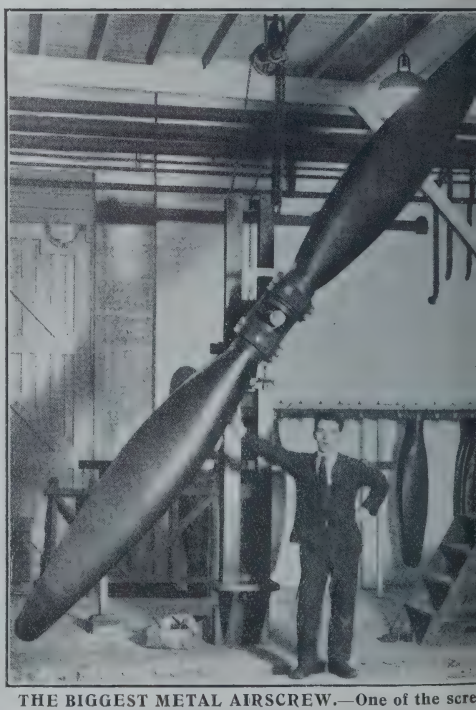
Both in taking off and landing the floats are remarkably clean, a fact which is proved by the small amount of spray shown in the accompanying photograph taken just as they are leaving the water. The vee bottom is also responsible for a very smooth landing and passengers have remarked upon the absence of jarring as the floats hit the water.

Whether the D.H.50 seaplane is best described as an air-yacht suitable for the private owner or as a commercial machine suitable for river or coastal air routes it is difficult to say, but it is certainly a really practical proposition.

At the maximum fully-loaded weight permitted by the Certificate of Airworthiness, 4,200 lbs., the machine will carry, in addition to full tanks giving a range of four hours, pilot, four passengers and a small amount of luggage.

As the D.H.50 under test is destined for use in hot climates, it is fitted with a large area radiator but even with this increased head resistance the top speed of the seaplane at sea level was 106 miles per hour, only three miles per hour less than with the wheel chassis.

The rate of climb at sea level is 500 feet per minute and the time to " unstick " has been measured as 20 seconds. The service ceiling is approximately 10,000 ft.



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PRIVATE FLYING.

The following note on the regulations concerning private flying—that is flying not for hire or reward—was issued from the Air Ministry on Mar. 25 :—

NOTES ON MODIFICATIONS TO REGULATIONS CONCERNING PRIVATE FLYING.

After a careful examination of the regulations governing private flying the Air Ministry has decided to introduce the following procedure for an experimental period :—

(a) *Issue of Certificate of Airworthiness.*

(i) The Air Ministry will issue, in respect of both type and subsequent aircraft, a Certificate of Airworthiness, valid for private flying purposes only, on receipt of a certificate from an "approved" constructor.

(ii) This certificate must state that the aircraft has been built by an "approved" constructor in accordance with the inspection requirements set forth in Air Navigation Directions and conforms in all particulars with the British minimum requirements as regards design and performance.

(iii) A list will be drawn up by the Air Ministry of aircraft and aero-engine constructors "approved" for this purpose.

(iv) The existing procedure for the issue of Certificates of Airworthiness will continue to apply in all other cases.

(b) *Renewal of Certificates of Airworthiness.*

(i) The period of validity of a Certificate of Airworthiness will remain as at present, namely, one year.

(ii) A Certificate signed by an "approved" constructor or licensed Ground Engineer or other competent person will be accepted by the Air Ministry for the purpose of renewal of a Certificate of Airworthiness of private aircraft.

(c) *Subsequent Modifications and Repairs.*

(i) Procedure in connection with modifications subsequent to the issue of a Certificate of Airworthiness will follow the lines indicated at (a) above for the issue of a Certificcate of Airworthiness.

(ii) Certification by a licensed Ground Engineer after an aircraft has been overhauled, repaired or parts of it have been replaced will no longer be required.

(d) *Private Pilot's Licence.*

(i) The Licence will, as now, be valid for one year.

(ii) The practical tests and technical examination will continue to be enforced for the issue of a licence and evidence of recent reasonable flying experience will continue to be required for renewal.

(iii) The medical examination for the issue of a licence will continue to be required but subsequent medical re-examination for renewal of the licence will be waived.

(e) *Log Books.*

A Journey Log Book will not be required for flights within Great Britain and Northern Ireland but for flights abroad a Journey Log Book must be carried in the aircraft and contain the prescribed particulars in accordance with the requirements of the International Air Convention.

Steps will be taken to amend the Air Navigation Order and Directions as soon as possible in order to give effect to these proposals.

At first sight the new regulations foreshadowed in this note would seem to constitute a marked step towards freeing private flying from the existing restrictions.

In so far as concerns the removal of the requirement for a ground engineer's certificate after repair and overhaul, the abolition of the annual medical examination for an "A" licence, and the abolition of journey log books for inland flying, the new scheme may be welcomed.

It does not however meet the objections which have so frequently been raised in regard to the Certificate of Airworthiness. It is obvious that the C. of A. will still be issued by the A.M., and presumably a fee will be extorted in respect thereof. Instead of the Ministry itself investigating the design and construction, it will now be content with a certificate from an "approved" constructor that the machine complies in every respect with the requirements which the Ministry now enforces.

In the first place this leaves the control of design still entirely in the Ministry's hands, and makes of aircraft constructors a close corporation, admission to whose ranks the Air Ministry may control by withholding approval.

Secondly, it places upon the approved constructor responsibility for guaranteeing that all the requirements which the Ministry would impose under present conditions have been met—quite irrespective of whether in that constructor's opinion these requirements are of any value or not. In fact many of the Air Ministry regulations in regard to materials, workmanship, and so forth, are entirely unnecessary in many cases—particularly for private aircraft. At present the designer is free to neglect such of these regulations as he thinks it fit or judicious to disregard, and it then lies with the Ministry—if they think fit—to refuse to grant a C. of A. till this neglect has been rectified. If they do not object to the disregard in certain matters but grant a C. of A. despite them—as in practise they do in many cases—he is clear.

Under the new scheme he is required to certify that the machine complies in every detail with the official regulations—ridiculous or otherwise—and if he gives that certificate, and it is afterwards discovered that he has used, let us a say, a piece of steel which does not comply with standard specifications, then even though that particular may be better for its job than a standard steel, he is open to a charge of obtaining a C. of A. on false pretences. Under present conditions, if the Ministry pass the machine despite non-standard material, that is the Ministry's affair. If they object, it is open to the constructor to argue each point, and is precisely the time wasted in such argument that leads such waste of time and money in the production of machines.

Under the new scheme the designer has either to forego the little latitude he now has, or must resort to precisely the same kind of argument on points of detail before he can issue the required certificate, with the difference that where under existing regulations he need only argue those points noticed and actually raised by the Ministry, he must now himself raise all the points that the Ministry might conceivably question.

In the opinion of one of the most experienced designers of civil aircraft in this country, the new scheme will cause more trouble than the old—and will not be worth while adopting.

The new scheme merely places upon the constructor the responsibility now taken by Ministry officials for compliance with Ministry requirements. The constructor under the delegated responsibility has obviously less discretion in regard to interpretation of the regulations than the official whom he is to replace, and if the constructor is honest, the restrictions will necessarily become more restrictive.

What is required is no mere delegation of rule-enforcing powers to the constructor. It is freedom for any reasonably competent designer to produce and put into service aircraft which in his considered opinion are airworthy, and not merely such as he is sure will comply with the official rules.

There would be no particular difficulty about producing an aeroplane which would pass present A.M. stressing inspection and so forth (and for which the constructor could safely give the required certificate) which should nevertheless be entirely unsafe as a flying machine. There would be still less difficulty in producing a perfectly safe aeroplane to which such a certificate could not truthfully be given. What is required is freedom to produce machines of this latter class, and to achieve this end it is necessary to provide for the granting of a C. of A. on the guarantee of any responsible person that the particular machine in respect of strength, control, stability and performance, is a safe flying machine. Responsibility should be measured mainly if not entirely by the guarantor's financial capacity to meet claims against him for non-fulfilment of the guarantee, and not by the "approval" or otherwise of any body of "experts" official or non-official.—W. H. S.

FICTION FOR FLAG-WAGGERS.

[*The War God Walks Again.* By F. Britten-Austin. Williams and Norgate Ltd. London, W.C.2. 247 pages. 3s. 6d. net.]

This book is a collection of six stories which have appeared in various magazines in this country and the United States. Mr. Britten-Austin's pet theme is the horrors of future wars, which horrors he implies might be averted if the heads of the Admiralty, War Office and Air Ministry would only take his advice.

Major-General Sir Ernest Swinton, K.B.E., C.B., D.S.O. in his introduction to the book describes the author as having an observant, inquiring and speculative mind. Major-General Swinton goes on to say :—"Not content however with the dumb acceptance and sterile record of the impressions registered, he has selected from the welter of events those which show signs of possessing radical tendencies of vital importance, has applied reasoning and vision and essayed to continue the curve of the past into the future."

Mr. Britten-Austin's stories are gloomy and morbid. Perhaps it is the entire absence of any light relief which prevents his vivid description of trench warfare in 1914-18 from getting there in the same way as does Ian Hay's "First Hundred Thousand."

His attacks on the Staff are neither impressive nor accurate nor in good taste.

[These passages may not be intended as attacks on the Staff, and may be only a representation of the opinions of people in the stories—people of a type which did exist during the War 1914-18 and still exists. But they give the impression that they are the opinions of the author.—ED.]

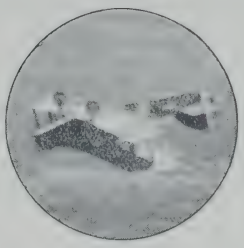
The most likely people in the whole book appear in "The Battlepiece : New Style." They are two young men standing on the edge of a crowd which is acclaiming the outbreak of one of Mr. Britten-Austin's new wars. One of them says :—"Those yelling enemy-eaters never went to war with their lives—and never mean to go they ought to have a taste of it. Remember Passchendaele!"

Lots of enemy-eaters who never went to war will probably enjoy this book.—C. M. MCA.



Looping photographs by courtesy of "Flight."

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A LOSS TO THE INDUSTRY.

On Mar. 16 *The Lancashire Daily Post* published a statement, on official authority, that the English Electric Company Ltd. of Preston had decided to close its Aircraft Department as a result of the Government's inability to place any orders with them this year. A portion of the staff had adready received their notices and the remainder would receive them during the next ten days or a fortnight.

Alderman Lightwood, Mayor of Lytham St. Annes, had previously telegraphed to Sir Samuel Hoare, Secretary of State for Air, as follows :—

Complete closing down of aircraft works at Lytham will involve serious unemployment of workpeople resident in the borough. Is it possible for the Town Council to make representation with a view to averting this catastrophe?

A letter was also despatched by Mr. Lightwood suggesting that a deputation should be received by the Air Ministry. On the same day the following telegram was received from Sir Samuel Hoare :—

Your telegram. Decision as to impossibility of placing any orders this year with English Electric Co. was taken with the utmost reluctance, and after full consideration of all relevant factors, including those you mention.

In existing conditions there is no alternative and decision must be regarded as final. The Secretary of State regrets therefore that the proposed deputation from the Town Council can serve no useful purpose.

The English Electric Co. Ltd. was formed shortly after the War by an amalgamation of Dick, Kerr and Co. Ltd. of Preston, the Coventry Ordnance Co. Ltd. of Coventry and the Phœnix Dynamo Co. Ltd. of Bradford. The Aircraft Department was in fact a legacy from the Phœnix Dynamo Co.

Early in the War the Phœnix Dynamo Co., the moving spirit of which was Mr. P. J. Pybus, were induced by the Air Department of the Admiralty to take up the manufacture of seaplanes. This was quite in accord with the official habits of the time, which resulted in seaplanes being built as far inland as possible, by firms such as the Phœnix Co., and Sage's of Peterborough, while land-going aeroplanes were built on the sea coasts. Mr. W. O. Manning, one of the earliest pioneers of British Aviation, whom one first met when he was designing aeroplanes with Mr. Howard Wright in the earliest days of 1909, and who was at that period of the War a technical officer in the R.N.A.S., was released from the Service to take control of the Phœnix Company's aircraft work.

The firm's first output consisted of Short seaplanes built under license, and the firm soon made a high reputation for the quality of its workmanship. Towards the end of the War the firm produced several very successful flying boats entirely designed by Mr. Manning, the Phœnix Cork boat having a very high performance.

After the War, when the amalgamation took place, a portion of Dick, Kerr's Works at Preston and the firm's seaplane sheds at Lytham near Blackpool, were allocated to aircraft, and the whole of the aeronautical work of the Phœnix Dynamo Company was transferred there. Mr. Gibson Knight was appointed manager of the Aeronautical Department, and Mr. Manning with the design section were transferred from Bradford to the English Electric Company's offices in Kingsway, so that they might co-operate the more easily with the technical side of the Air Ministry.

Having the design department in London and the works in Lancashire naturally caused a certain amount of difficulty in production but a number of very interesting flying boats were produced. The last of these, the Kingston type, proved particularly successful.

One of them made quite a remarkable voyage round England from Lytham to Felixstowe some months ago. And the last of them was delivered by air on Mar. 16, the day when the closing down of the works was definitely announced.

This boat left Lytham at 12.08 and reached Cattewater, Plymouth, at 18.25 after a stop at Pembroke Dock. The next day she left for Felixstowe, where she arrived at 17.40 after a stop at Calshot for lunch. She has a new form of hull, or wood construction. And one is told that she gets off the water very cleanly with a low bow wave which is well aft of the airscrews and planes. The gunner's cockpit aft of the engines, which were a feature of previous boats, have been eliminated. And another change is that all metal fittings and the tanks are made of stainless steel.

If she had been produced twelve or eighteen months ago one feels sure that orders would have resulted which would have kept the firm's aircraft works going.

The result of the closing down will be to throw out of work, at any rate temporarily, apart from a number of highly-skilled aircraft workers in wood and metal, several people who have done valuable work for British Aviation at one time or another.

Mr. Gibson Knght, who was in the Aeronautical Inspection Department of the Air Ministry during the War 1914-18, will doubtless continue with the firm on the regular engineering side. But of the aircraft people pure and simple who will be thus thrown out of gear, one may mention primarily Mr. W. O. Manning who, as one has already said, was one of the earliest of our aircraft designers and constructors. There there is Mr. Marcus D. Manton, the firm's pilot and chief inspector, who will be remembered as a very able pilot at Hendon before and during the War. There is also Mr. V. S. Gaunt, the assistant works manager, who has been associated with aircraft from the earliest of the Phœnix Company's activities. And there are Mr. J. D. Williams, the chief draughtsman, Mr. J. Alexander, the shop superintendent who formerly worked on racing yachts and speed boats with the famous firm of Fife's, and Mr. J. S. Oswald, who was Mr. Manning's chief assistant.

Among the workshop staff one may mention Mr. C. J. Blackburn, the chief buyer, Mr. G. E. Jackman, foreman of the woodworking shop, Mr. S. Malcolm, foreman of the metal shop, Mr. C. Rogers, foreman of the boat-building and erection shops, Mr. A. Calder of the engine shop, and Mr. A. Gibson of the drawing office.

No doubt all of them will sooner or later be absorbed by the active firms of the Aircraft Industry, for the valuable experience which they have gained during the past few years must not be wasted, in spite of the alleged hard times in the Aircraft Industry.

The knowledge which had been accumulated by the employees of the Aeronautical Department of the English Electric Company Limited will not be lost, but it is a great pity that a firm which has such great possibilities for good work and large output should be removed from the list of those which are necessary to the maintenance of our First Line of Defence.—C. G. G.

MORE ENGINE RECORDS.

What modern British aero-engines will stand when maintained on a proper system is shown by figures recently obtained by Imperial Airways Ltd. The firm has had twenty Napier engines in use in their de Havilland 34 biplanes, and between them these twenty engines have covered a total of over 2,000,000 miles.

One engine alone has covered nearly 200,000 miles and seven others have run for more than 150,000 miles each. This speaks very highly not only for the design, workmanship and material of the Napier Lion but also for the system of maintenance installed by Major Woods Humphery.

There is also interest in noting that the four new Handley Page machines, the W.10s, which will be coming into service during the next week or so, are also fitted with Napier Lion engines, probably the same ones.

JUXTAPOSITION.

The following is an extract from *The Daily Telegraph* of March 15 :—

AERODROME PARTLY DESTROYED.

Swingate Aerodrome, about two miles from Dover Castle, has been partially destroyed by a fire which started in one of the large buildings and lasted several hours. The framework of the destroyed buildings was still red-hot last night. Dover Fire Brigade received a stand-by message from the military authorities, but the Lancashire Fusiliers with their fire appliances dealt with the outbreak. The aerodrome was occupied by American airmen during the war, and has since been used principally for Territorial camps, including those of the London Brigades, on their visits.

For absolute security employ Hobbs and Co.'s Safes to safeguard your valuables from fire and burglary.—Hobbs, Hart and Co., Ltd., 76, Cheapside, E.C.2. Tel., City 1769

The juxtaposition (presumably intentional, for the sweet uses of advertisement) of the two paragraphs, has moved an official of the Air Ministry to effuse thus :—

When the long day's work is finished and the 'buses are back in their sheds,
And officers, airmen and n.c.o.s are ready for slumber quite,
There's one last duty that must be done before we can seek our beds
To lock our precious aerodrome in a fireproof safe for the night.

We're awfully proud of our aerodrome—it's really our only pet;
It gets on our nerves to a shocking degree if it's ever out of our sight:
The only way we can calm our fears and go to sleep and forget
Is to lock our dear old aerodrome in a fireproof safe for the night.

Of course we take endless trouble to keep our aerodrome smooth and flat—
A crease or a wrinkle in it would act on us like a blight;
So we form in line along one edge and roll it up by that—
Then we lock our priceless aerodrome in a fireproof safe for the night.

These aerial transport companies may think that they do things well
By having a host of ground engineers to see the machines are right
But when they say "Paris to-morrow," well, I ask you, how can they tell,
When they never lock their aerodrome in a fireproof safe for the night?

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FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
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C.P.

MR. COBHAM'S LECTURE.

On Friday, Mar. 26, Mr. Cobham gave a lecture at the Æolian Hall on his flight from London to the Cape and back on a de Havilland 50. Sir Charles Wakefield, who took the Chair, said that he was merely a curtain raiser, and disappeared after introducing Mr. Cobham with a few appropriate words.

Mr. Cobham opened his lecture by saying that up till twelve the previous evening he had not started to prepare what he was going to say. However Mr. Cobham's story, told naturally just as it occurred to him, gave a much fresher and more vivid picture of the flight than a carefully prepared effusion devoid of personality.

One cannot attempt here to follow the story of the flight, the worst hardships of which seem to have been the extremely dangerous country over which they flew during a large part of the flight, often totally unexplored and not marked on the map, and the varying conditions of climate which they encountered. The photographs which he showed of the towns, type of country and the many well-known landmarks over which they passed were extraordinarily good and very interesting. Those of the Victoria Falls in particular were wonderful. They left one anxiously awaiting the production of Mr. Emmott's films taken during the journey.

Mr. Cobham praised Mr. Elliott, Mr. Emmott, the aeroplane and all its belongings for their reliability and endurance, and the audience replied by expressing their appreciation of Mr. Cobham most heartily.

The flight, which was entirely due to Mr. Cobham's enterprise, has been of great value in popularising flying in South Africa and in exploring the possibilities which exist for Commercial Aviation there. He thought that light aeroplanes could be of great use to farmers in outlying parts to keep in touch with civilisation, and he hoped to see the formation of an air line between Central and South Africa.

That Mr. Cobham's lecture will be welcomed on its tour is assured by his already wide reputation, but one advises those who have not already noted the date of his visit to their town to do so immediately.—M. H.

[One would merely add that certain photographs of unclothed negro women seem unnecessary. After photographs which have appeared in the press of dancing girls in tights crawling over a Junkers monoplane at Berlin, and of barelegged women in running shorts crowding round a Moth at Stag Lane, perhaps the African photographs were a natural sequence. But they do not add to the interest of the lecture and they really have no more to do with aviation as such than have the other more or less unclothed groups.—C. G. G.]

THE FLYING CLUBS.

The London Aeroplane Club.

Fog and wind alternately during the week prevented flying and Sunday was the only full day we could get in. The total flying time was 7 hrs. 15 mins.

The following members had flying instruction:—G. Quirk, A. R. Ogston, J. H. Saffery, R. L. Hare, T. W. Eady, K. V. Wright, W. Hay, B. B. Tucker, Miss O'Brien, N. S. Brough, J. S. M. Michie, W. E. P. Johnson, S F. Adams.

The following members made solo flights:—Mrs. S. C. Elliott-Lynn, Major K. M. Beaumont, G. H. Craig, Sq. Ldr. M. E. A. Wright.

Advantage was taken of the foggy weather to chance the engine in G-EBLI. The Club's spare engine which has now been fitted with dual ignition was installed.

Members will be pleased to hear that Capt. F. G. M. Sparks, the Club Instructor, is making good progress. He is still at the Hendon Cottage Hospital.

Sq. Ldr. M. E. A. Wright assisted with the flying instruction during the week-end.

Donations for the purchase of a third D.H. Moth are as follows:—T. H. O. Richardson, £2; H. Kennedy, £1; G. W. Peck, £1; G. N. Howe, £1; C. N. Braud, £1. Amount previously reported, £690. Total to date, £696.

Mr. N. H. Jones, who recently took his Aviator's Certificate, has been given a commission in the Auxiliary Air Force.

Mr. N. H. Jones and Mrs. Eliott-Lynn have recently acquired D.H. Moth G-EBKT. On Sunday morning the Middlesex Women's Athletic Association visited Stag Lane and Mrs. Eliott-Lynn was busily engaged giving twenty-two of them passenger flights.

Mr. D. Kittell, on his own Moth, flew for 1 hr. 10 mins. on Saturday.

The Lancashire Aero Club.

The following report has been received by telegraph, owing to The Aeroplane being compelled to go to press a day early owing to the Easter Holidays:—

Twenty-eight members had instruction. Dual instruction amour to 15 hrs. 10 mins. Total flying for the week 18 hrs. 10 mins.

The Airship Club.

The application of the Airship Club for the use of the Secreta Staff and address of the Royal Aero Club has been granted un certain conditions to be agreed upon.

Aviators' Certificates.

The following Aviators' Certificates have been granted by the Ro Aero Club:—7982 Norman Herbert Jones, Mar. 1, 1926; 7983 Duc Alastair Nixon Watt, Mar. 11, 1926; 7984 Mark Antony Lac Nov. 18, 1925.

THE ROYAL AERO CLUB COMMITTEE.

The following nominations for election to the nine vacanc on the Committee are reported:—Air Vice-Marshal Sir W Brancker, K.C.B., A.F.C., Ernest C. Bucknall, Lord Edw A. Grosvenor, Major Harold Hemming, A.F.C., E. J. B. H Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieut.-Col. J. T. Moore-Brabazon, M.C., M.P., Lieut.-Col. M. O'Gorman, C Air Commodore C. R. Samson, C.M.G., D.S.O., R.A.F.

As there are nine vacancies no election will be necessa

THE AUTOGIRO COMPANY.

All who are interested in aviation will be pleased to h of the formation of the Cierva Autogiro Co. Ltd., wh offices are at Bush House, Aldwych.

The Company has as its directors Air Commodore J. Weir, C.B.E. (R.A.F. Reserve) (Chairman and Manag Director), Señor Don Juan de la Cierva, and Mr. H. K. Kindersley.

Air Commodore Weir is already well and favourably kno to all concerned with British Aviation. Señor de la Cierva practical flying man and engineer from 1910, and buil of numerous experimental aircraft, is the inventor of Autogiro. Mr. H. K. M. Kindersley is the son of Sir Rob Kindersley, G.B.E., the well-known banker.

Mr. F. T. Courtney, the famous pilot, has been appoin Technical Manager. The Company has been formed for purpose of research work connected with the invention, the disposal of the construction rights of the Autogiro, wh demonstrated its revolutionary characteristics so successfu in the hands of Mr. F. T. Courtney at Farnborough in Octo and November last.

[There is no truth in the rumour that the Company already drawing royalties from the Police on account of gy tions at Hyde Park Corner, the Victoria Memorial, Par ment Square and on Boat-Race Night.—Ed.]

THE CAM ENGINE.

Mr. Sherman M. Fairchild, of the Fairchild Aviat Corporation, New York, writes:—

The article in The Aeroplane of Dec. 16, 1925, on page 708, cerning the McCook Field cam radial engine has been brought my attention. This article gives credit for the design of this en to Mr. Glenn D. Angle. I wish to inform you that the engine refer to was invented and designed by Mr. Harold Caminez, form of the Engine Design Section, U.S. Army Air Service, McCook Fi and now chief engineer of the Fairchild Caminez Engine Corporat

The development of the cam engine was started by McCook F in 1924 in order to meet the demand of the Air Service for an cooled engine of small frontal area and low head resistance would develop its rated horse-power at a low propeller r.p.m., would have reasonably low weight per horse-power ratio, and would be of simple detail construction so that a reliable engine c be manufactured at a minimum cost.

The Engineering Division of the Air Service built an experime four-cylinder engine of 447 cub. inch piston displacement from sur engine parts it had on hand, to determine the feasibility of the n cam mechanism. This engine was submitted to a dynamometer at McCook Field on July 25, 1924, and developed 318 h.p. at r.p.m., which corresponds to a brake mean effective pressure of lbs. per sq. in. The mechanical efficiency of the engine was 85 per c

In view of the satisfactory results obtained from this first eng the Fairchild Caminez Engine Corporation of New York was for in 1925 to complete the development of the cam engine.

The company delivered its first engine to McCook Field wher was run for about 50 hours in the preliminary tests. This same en is now undergoing a 50-hour full-throttle test at the factory of company at Farmingdale, Long Island, after which it will be stalled in one of the company's airplanes for flight test.

This first engine was built for the U.S. Army Air Service. factory is now tooling up to build these engines for commercial military aircraft uses, and engines will be ready for the marke April.

The specification for these engines calls for four-cylinder ra air-cooled cam engine rated 150 h.p. at 1,200 r.p.m., weight 360 pou

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CIVIL AVIATION.

Owing to the necessity of going to press early, because of the exigencies of the holidays, the usual table of air line statistics is held over until next week. This therefore is a no table week.

Croydon Notes.

This is alleged to be the last week during which single-engined machines are to be run on the passenger services of the British air lines. On Wednesday the D.H.34s and the Vulcans will alight at Croydon never to rise again—with passengers at any rate, so it is said. But one is inclined to think that when the Summer rush comes we shall again see the 34s loaded with passengers hurtling off to the Continent.

The D.H.34 has left a fine record behind it. It was designed purely and simply to earn the subsidy that was in force in 1922. Everyone groused about them when they first came on the service and an eminent aeronautical consulting engineer told one at the time that they could never be any good.

In spite of that they have carried the bulk of the passenger traffic and they were fast and comfortable in the air and most of the pilots liked to fly them. And it is a very great tribute to the reliability of the Napier engine that forced landings from mechanical failure have been few and far between and no British machine has been forced down in the Channel.

The De Havilland 34 and the Napier Lion engine deserve every praise for the part they have played in making Civil Aviation. If the new De Havilland 66s with Bristol Jupiter VI engines are in proportion as successful, they will be very fine machines indeed.

The accommodation at the aerodrome is being increased. Several large hangars capable of housing the W.10s are being erected on the West side of Plough Lane. Whether these will be enough to house the fleet of Handley Pages and the Vanguard and the droves of expected Goliaths one does not know.

Meanwhile the new buildings on the other side of the aerodrome are beginning to show through. The framework of an enormous hangar is beginning to take shape.

Mr. Perry has been flying an Avro-Airdisco and a Nimbus D.H.9 during the week.

In the shops of A.D.C. Aircraft Ltd. Cirrus production is proceeding apace. An interesting event concerning the Nimbus has just taken place. But at the moment it is a secret.

The clouds of Nimbus and Cirrus having gathered at the call of the A.D.C., the help of the North Wind is being sought, and in this connection also an interesting event may shortl be expected.—G. D.

Over the Boat Race.

There was quite a cluster of aircraft over the Boat Rac on Saturday. First on the scene was a W.8b (Rolls-Royce which was piloted by Mr. G. P. Olley and contained a numbe of Cambridge men who had hired the machine. Shortly afte he arrived a D.H.9, presumably of the Surrey Flying Service appeared from the direction of Croydon. These were joine a few minutes later by a couple of Moths from Stag Lan direction and very high up an Avro of unrecognisable origi possibly Surrey also, was disporting itself.

Last and loudest came a Handley Page Hyderaba (Napiers) with R.A.F. markings. Really a night bomb should be taught to make less noise. This machine mad more row than all the other five machines together. On gathers that this is solely due to a personal whim of one Sir Geoffrey Salmond's "technicians."

The Boat Race was first seen from the air in 1910, whe the late Mr. Douglas Graham Gilmour followed it from sta to finish in a Bristol box-kite. A very good view of th event can be had from the air as the blue on the oar especially the Cambridge oars, can be clearly seen fro 3,000 ft.

But if the aerial traffic over the race continues to gro drastic regulations will have to be made and the gyrato method which is being imposed on road traffic will have be adopted.—G. D.

Commercial Aviation.

The following communication has been received :—

Dear Sir,—Perhaps you may be interested to note for your Aer nautical Columns that for the first time in the history of Briti Aviation a woman pilot has consented to fly commercially.

Mrs. S. C. Eliott-Lynn, so well known in the world of athletics, during April, giving a series of exhibitions in stunt flying with t Southern Counties Aviation Co. of Brooklands Aerodrome. These w take place in Hereford, Swindon, Chippenham, Bristol, Bath, Burto on-Trent and various other towns and will include looping the loo rolling, spinning nose dives and other acrobatics hitherto unattempt by women. This will be the first time that a British woman pi has officially looped the loop.

In addition to this she has consented to carry out a number parachute descents at various towns where the Southern Count Aviation Co. are making short passenger flights.

The pilots of this pioneer firm have carried over forty thousa passengers on short flights without accident, and are the first have secured the services of such a brilliant woman pilot.

Yours faithfully,

Southern Counties Aviation Co

[The only comment that appears to be necessary on th

SPECIAL OFFER TO AEROPLANE READERS.

A few copies of the following publications are available at greatly reduced prices, and can be obtained either through a Bookseller or direct from the publishers:

AERONAUTICS, LIMITED, 14, Bream's Buildings, E.C.4.

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announcement is that if women are going to claim equality with men there seems to be no adequate reason for making any special fuss when a woman does what men do in the ordinary pursuit of their profession.—Ed.]

THE BERLIN-PARIS AIR SERVICE.

In the reorganisation of the German civil air lines, the Deutsche Luft-Hansa, the new company formed by the amalgamation of the two old companies, the Deutscher Aero Lloyd and Junkers, has included a Berlin-Paris service in its new programme, subject to satisfactory negotiations with France.

The French Under-Secretary for Air has since definitely stated that no such line will be authorised so long as Germany refuses to allow French civil aircraft to fly over German territory.

And, of course, Germany cannot give such permission until the French themselves consent to the abolition of the infamous "Nine Rules," imposed on Germany by the Treaty of Versailles, which make it illegal for *any* aircraft of *any* nation to fly over Germany if that aircraft exceeds a fixed limit of inefficiency.

COPENHAGEN—TOKYO.

On Mar. 26, Lieuts. Herschend and Botved of the Danish Army, who are attempting to fly from Copenhagen to Tokyo on two Fokker C.V biplanes (450 h.p. Lorraine-Dietrich engines), reached Bushire from Baghdad. On Mar. 27 they flew to Bandar Abbas and on Mar. 28 they reached Karachi.

ANOTHER HEIGHT RECORD.

On Mar. 19 M. Coupet flying a Breguet XIX biplane fitted with a 500 h.p. Farman engine and carrying a useful load of 1,000 kgs. (roughly one ton) reached a height of 21,158 feet. The previous record was held by the same aviator who on May 6, 1924, on a Farman biplane fitted with the same engine reached a height of 18,460 feet.

MORTGAGES AND CHARGES.

Airlandwater Transport Co. Ltd.—Regd. First debenture dated Feb. 10, 1926, to secure £500, charged on the company's property, present and future, including uncalled capital.

Holder: G. S. Streeter, Thorley Place, Bishops Stortford.

Particulars also filed of £550 debentures authorised Feb. 3, 1926, and constituting a second charge on the above-mentioned property, the whole amount being now issued.

NEW COMPANIES.

The Cierva Autogiro Company.—The Cierva Autogiro Company Limited was registered as a "private" company on Mar. 24, with a nominal capital of £125,000 in £1 shares (50,000 8 per cent. participating preference and 75,000 ordinary). The preference shares take 20 per cent. of the surplus profits of each year, distributed after payment of the fixed preferential dividend, and in a winding up rank first for return of capital. After the ordinary capital has been repaid, plus £3 per share premium, the preference take 20 per cent. and the ordinary 80 per cent. of any assets remaining. The objects are: To acquire any invention in relation to the manufacture, application and use of flying machines of the Cierva Autogiro type, or of any other kind, or of any apparatus therefore, in particular to acquire the benefit of certain existing inventions from Juan de la Cierva, and to carry on the business of manufacturers of and dealers in aircraft of all kinds, automobile engines, propellers, fabric, varnishes, paint, enamels, motor and aeroplane tyres, etc.

The subscribers (each with one ordinary share) are: H. E. Littlewood, 47, Parkstone Avenue, Hornchurch, solicitor's clerk. G. Dickson, 2, Bond Court, Walbrook, E.C., clerk. The first directors are to be appointed by the subscribers. Qualification: None required. Remuneration: Expenses not exceeding £50 each per annum, and any further remuneration voted by the company.

Solicitors: Linklaters and Paines, 2, Bond Court, Walbrook, E.C.4.

PERSONAL NOTICES.

Death.

POLKINGHORNE.—On Mar. 24, at British Station Hospital, Karachi, Frank Polkinghorne, R.A.F., eldest son of Mr. and Mrs. W. Polkinghorne, St. Columb, Cornwall. Indian papers, please copy.

Marriage.

DELAMAIN—VYVYAN.—On Mar. 12, in London, quietly, by R. A. O. Tisdall, M.A., Eric Charles Delamain, M.C., R.A.F., young son of Mr. W. G. Delamain and the late Mrs. Delamain, to Ma Gertrude, younger daughter of Mr. and Mrs. F. A. Vyvyan—all l of Buenos Aires.

Forthcoming Marriages.

DAVIES—IEVERS.—The engagement is announced between Hu Norman Davies, R.A.F., son of Mr. and Mrs. Hugh Davies, Londo S.W.6, and Dorothy, elder daughter of Mr. and Mrs. E. F. Ieve Croft House, Epsom

PRIOR—MILLER.—The engagement is announced between Flg. Cecil George Prior, R.A.F., only son of Mr. and Mrs. W. G. Pri of Clapton, and Margaret, youngest daughter of Mr. H. S. and t late Mrs. Miller, of Stamford Hill.

Births.

AITKEN.—On Mar. 13, at Valetta, Malta, to Ena (*née* Tweedi wife of Flt. Lt. Aitken, M.C., A.F.C.—a son.

ELLERTON.—On Mar. 24, at Hill House, Sunninghill, Berks, t wife of Flt. Lt. A. Spenser Ellerton, R.A.F.—of a son.

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THE AEROPLANE
INCORPORATING AERONAUTICAL ENGINEERING
Edited by C. Grey

Vol. XXX. No. 14. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

REVERSION TO TYPE.



THE REVIEW:—The Multi-Engined Fleet of Imperial Airways, Ltd., being reviewed and named at Croydon, on March 30, by the Lady Maud Hoare and Sir Samuel Hoare. Four new Handley Page biplanes flew over from Cricklewood, making a fleet of seven in all. These newcomers have Napier Lion engines, thus reverting to the style of the original Handley Page W.8, which in 1919 was the fastest twin-engined machine of its day.

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SEE PAGE 367 FOR PALMER LANDING WHEELS AND TYRES (325)

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This machine has many special flying and constructional characteristics and some of these will be dealt with in future advertisements.

The name "AVRO" has always been the hall-mark of the best training machine in the world. The word "GOSPORT" is associated with the most scientific system of training ever devised. This system was operated from the outset by an earlier type of AVRO aeroplane and it is fitting that this, the latest and most perfect training aeroplane in the world, should be named the AVRO "GOSPORT."

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APRIL 7, 1926.

THE AEROPLANE

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VOL. XXX. No. 14.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegrapnic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s.
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ON CIVIL AVIATION.—I.

THE FLEET REVIEW.

Tuesday March 30 was a remarkably fine day. Consequently several hundred people who went to the London rminal Aerodrome at Croydon somewhere before midday that day, and left about in time to get back to Town tea or dinner, had a charming day in the country. Also, newhere about a hundred of us at any rate had an excellent ich at the Trust House Hotel at the expense of Imperial rways Ltd.

One thinks that Trust Houses Ltd. rather missed an opportunity, for all sorts of important people connected with aviation, and a lot of Modocks with money, were there—most of them with large cars—and if Trust Houses Ltd. had mphasised the fact that they had put on that excellent lunch ey might have convinced a number of these people that the rious Trust Houses all over the country can be relied upon provide food and accommodation up to a fairly high ndard of hotel-keeping. And so the long-promised return Trust Houses Ltd. to a dividend-paying basis might have en accelerated.

Most of us hardly felt like guests at that lunch, because ch and everyone of us as taxpayers helped to provide it—way of our contribution to the £100,000 a year subsidy from e Government, of which Imperial Airways Ltd. has the nopoly. And there is always a certain satisfaction in getg a bit of one's own back.

Apart from the bright sunshine, and the nice fresh air, and the good lunch, and a very amusing speech by Sir Samuel Hoare, one found oneself wondering what one was doing at an entertainment of this kind at the end of the first quarter of the Year of Our Lord 1926.

The occasion was called a Review of the Fleet of Imperial Airways Ltd., and one believes that it was supposed to be the opening of a new era in British Civil Aviation, or the marking of an epoch, or a milestone in our history, or something of that sort. The general idea was that from that date henceforth and forever single-engined passenger-carrying aeroplanes are to be banned, excommunicated and damned by our monopoly-subsidy airway. And, to make possible the fulfilment of this pious resolution, four brand new twin-engined Handley Page biplanes were delivered, more or less in formation, from Cricklewood to Croydon.

THE VERY LATEST.

The word "new" is strictly accurate, in that the machines were unused until that day, and smelled to Heaven of fresh paint. And they are known officially as W.10s, which is a new type number. But as a matter of fact they differ hardly at all aerodynamically from the original W.8 which the late Mr. Bager flew to Paris in December, 1919.

The original W.8 had two Napier engines and so have these. The W.8bs, which have done such hard work for Imperial Airways during the past four years have Rolls-Royces of 365 h.p. each, but as more speed and power is now desired these new machines have reverted to the 450 h.p. Napiers.



THE TURNING POINT.—A photograph by the Surrey Flying Services of the Crystal Palace, whither and whence the visitors to Croydon were transported in the newly-acquired air liners on Mar. 30.

The lateral control seems to have been improved by fitting better balanced ailerons, and the longitudinal control to have been improved by apparently borrowing the tails off Farman Goliaths. The passenger cabin has been carried right forward till the front bulkhead comes pretty well under the pilot's seat, and the luggage compartment is now aft of the cabin. Apart from, that and some few details of construction which do not affect the aerodynamic qualities of the machine, there seems to be no appreciable difference between the W.10 and the various W.8s.

Whether the wing section is exactly the same one cannot say, but at any rate it is of the old-fashioned thin section with an approximately flat bottom surface. Presumably this is because our experts at the Air Ministry do not yet appreciate the value of thick-section wings as used on the Continent. Consequently manufacturers cannot be expected to experiment with and demonstrate the use of thick wings so long as our Government experts are satisfied with the old types of wing which, as the various jigs and formers already exist, are naturally cheaper to build.

The engines still stand up unhoused and uncowled, with all their pipes and wires and things hanging out till they look like a Spanish horse at a bull-fight when the bull has done goring him. Control cables and pulleys, and the species of sheet-steel lever commonly known as a bloater, stick out all over the machines in the best war-time style.

Even the chairs in the cabins are of the old straight-up short-backed type, which provides about the least comfortable seating accommodation imaginable. They cannot be compared with the luxurious wickerwork lounges of the Dornier Komet, which can hardly weigh more than a few pounds extra apiece and certainly take up no more room when properly arranged.

So what we were really brought down there to see were four extremely nicely made and well-finished twin-engined aeroplanes embodying all the best ideas of seven years ago. No wonder some of us felt that we needed the fine day and the good lunch as a justification for having given up four or five hours' time in which we might have been doing useful work. What the total man-hours of work wasted that day were worth would need some calculating. Four hours of the time of one of His Majesty's Principal Secretaries of State would make a goodly sum to head the list.

Of course one does not in the least blame Mr. Handley Page for sticking to his 1919 design. W8s have always been quite good aeroplanes, according to their lights. And, in the words of *Punch's* famous literary critique, for those who li that kind of thing that is exactly the kind of thing that th will like. After all, Mr. Handley Page's business is the co mercial construction of aeroplanes rather than the constructi of experimental commercial aeroplanes and if people a content with his seven-year-old designs by all means let the have them.

But, in the Year of Grace 1926, one does rather expect see some development in wing sections, and something in t way of Handley Page Slots to give proper lateral contr below stalling point, even if one cannot yet expect full-leng slots to give the short get-off and slow landing of an Au Giro. And one firmly believes that with proper developme of wing design it is possible to produce such a performanc

On the Spot.

In order to emphasise the importance of the multiple-e gined fleet there were already drawn up in front of the shed before the four new machines arrived, two of the good o W8bs with Rolls-Royce engines. And there was also t Handley Page Hampstead with three Jaguar engines, the e gine which seized up and broke off its airscrew the other d having been replaced by a new one, and the damaged wing ha ing been neatly repaired.

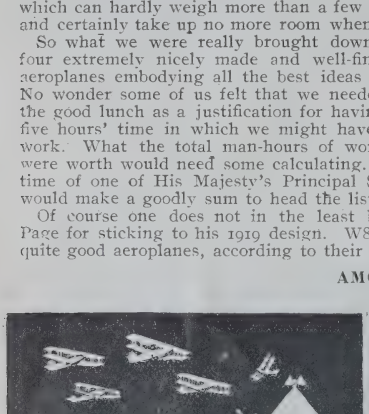
But one noticed that a D.H.34 had just finished unloadi when one arrived, and just as people were going away M Youell set off for Paris on another D.H.34. So the new era aviation did not actually begin on that day.

The W.10s arrived fairly well filled with passengers fr Cricklewood, including a number of Press men. Many of t passengers complained of being air-sick, probably becau nobody had thought to open any of the windows. And t smell of new paint certainly was rather overwhelming.

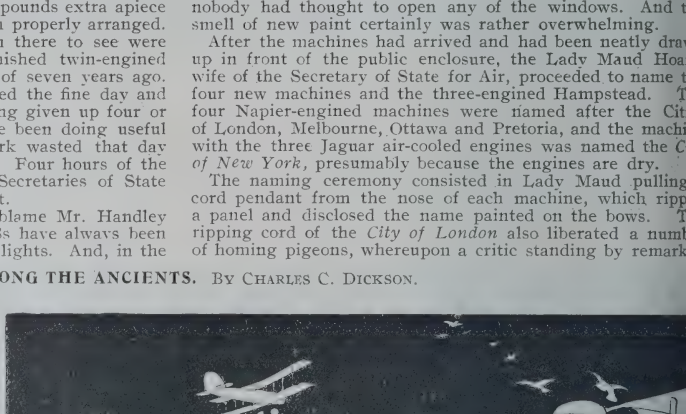
After the machines had arrived and had been neatly dra up in front of the public enclosure, the Lady Maud Hoa wife of the Secretary of State for Air, proceeded to name t four new machines and the three-engined Hampstead. T four Napier-engined machines were named after the Cit of London, Melbourne, Ottawa and Pretoria, and the machi with the three Jaguar air-cooled engines was named the *C of New York,* presumably because the engines are dry.

The naming ceremony consisted in Lady Maud pulling cord pendant from the nose of each machine, which ripp a panel and disclosed the name painted on the bows. T ripping cord of the *City of London* also liberated a numb of homing pigeons, whereupon a critic standing by remark

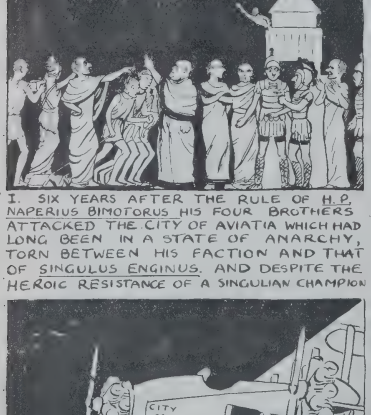
AMONG THE ANCIENTS. By Charles C. Dickson.



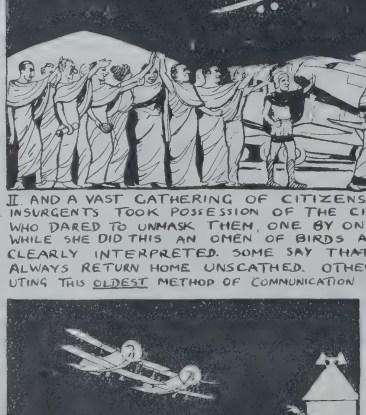
I. SIX YEARS AFTER THE RULE OF H.P. NAPERIUS BIMOTORUS HIS FOUR BROTHERS ATTACKED THE CITY OF AVIATIA WHICH HAD LONG BEEN IN A STATE OF ANARCHY, TORN BETWEEN HIS FACTION AND THAT OF SINGULUS ENGINUS. AND DESPITE THE HEROIC RESISTANCE OF A SINGULIAN CHAMPION



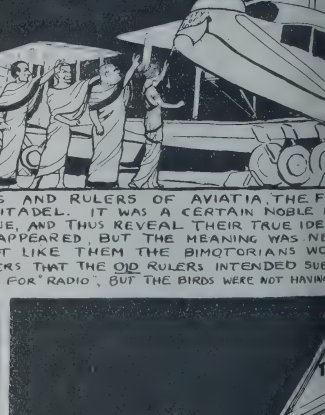
II. AND A VAST GATHERING OF CITIZENS AND RULERS OF AVIATIA, THE F INSURGENTS TOOK POSSESSION OF THE CITADEL. IT WAS A CERTAIN NOBLE WHO DARED TO UNMASK THEM, ONE BY ONE, AND THUS REVEAL THEIR TRUE IDE WHILE SHE DID THIS AN OMEN OF BIRDS APPEARED, BUT THE MEANING WAS NE CLEARLY INTERPRETED. SOME SAY THAT LIKE THEM THE BIMOTORIANS WO ALWAYS RETURN HOME UNSCATHED. OTHERS THAT THE OLD RULERS INTENDED SUE UTING THIS OLDEST METHOD OF COMMUNICATION FOR RADIO, BUT THE BIRDS WERE NOT HAVIN



III. THEN THE NOBLE LADY UNMASKED A SUSPICIOUS-LOOKING STRANGER, WHO PROVED TO BE A COUSIN OF THE INVADERS, AND WHO, WITH FOUR OTHER KNOWN SUPPORTERS HAD BEEN IN HIDING IN THE CITADEL.



IV. MEANWHILE TWO SUPPORTERS OF SINGULUS ENGINUS ATTEMPTED TO ENTER THE CITY UNNOTICED, DISGUISED AS ONE OF THE ENEMY, BUT WERE QUICKLY DETECTED A BANQUET WAS THEN GIVEN, AT WHICH



V. THE BIMOTORIANS ASSURED THE AVIAT THAT THEIR RULE WOULD BRING PE AND PROSPERITY. A BENEVOLENT DESP WAS ESTABLISHED; AND LATER PLEDGE GOOD FAITH WERE EXCHANGED.

Imperial Airways' new fleet have Napiers!

THE new fleet of machines being taken into service by Imperial Airways this season are fitted with the well-proved Napier aero engine.

This is further proof of the remarkable satisfaction the Napier has given on Commercial service.

Twenty Napier engines in use by Imperial Airways have covered over 2,000,000 miles and are still in service.

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NAPIER

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The Finest Aero Engine in the World

The Napier "Lion" was the engine used by Commandante Franco on his wonderful flight from Spain to South America, when he covered 6,259 miles in 59½ hours, flying.

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ACTON, LONDON, W.3

that at any rate it was nice to see something on that bright morning which really flew instead of just being pulled through the air.

The names appear to have been chosen as a compliment to the various cities of the Empire, and incidentally in the hopes that visitors from those cities may be induced to fly in the machines named after their home towns. The *City of New York* is, naturally, a recognition of the fact that somewhere about 60 per cent. of the passengers carried by Imperial Airways are Americans.

The machines were lettered in the Breat Britain series G-EB with two succeeding letters. One was G-EBMM, another was G-EBMS, and another was G-EBMT. When the last-named landed a bystander remarked that it was a pity that it could not carry passengers. Somebody else promptly "bought it" and said "Why can't it?" Whereupon the jester replied, "Well, it says so on the side, 'e be empty." And there was very nearly a fatal accident at Croydon that morning.

The *City of Ottawa* was more fortunate than the others because the Honourable Peter Larkin, who was attending the ceremony as High Commissioner for Canada, called for three cheers for that machine. Sir Charles Cheers Wakefield, as a former Lord Mayor of London, had previously given his particular blessing to the *City of London*. But the poor *City of Melbourne* was merely a routine job, despite the presence of Sq. Ldr. Brown, R.A.A.F., and the *City of Pretoria* had nobody at all to take an interest in her, unless Mr. Cobham, who is apparently the patron saint of aviation in South Africa, gave her a silent blessing.

The Discourses.

Thereafter we adjourned to the Trust House where, as one had already said, the catering firm missed a fine opportunity for advertisement.

Sir Eric Geddes, proposing the health of the guests, remarked that this was the second birthday of Imperial Airways, within a few hours. He said that when Imperial Airways started they had a nondescript fleet consisting of 50 per cent. of one type, 25 per cent. of another type and the other 25 per cent. made up of three or four other types. Now they had 75 per cent. of one and 25 per cent. of another, and were on a much simpler basis of operation. He added the comforting information that new machines were not at the end of their progress and they had others coming through which he hoped would mark a further advance. But he omitted to add that when the D.H.66s, and the Armstrong Argosies arrive they will add two more types of aeroplanes and another type of engine—the Jupiter.

He said that in the last two years they had flown 1,750,000 miles and had carried 23,000 passengers with remarkable regularity, and in the last twelve months they had not had a fatal accident. He pointed out that taxi business to European capitals was not Empire aviation and he hoped that the Cairo Karachi service, which would be started within twelve months with three-engined machines, would be the first link in the Empire air chain towards Australia. They intended the service to be once a fortnight at first but he believed that when once they had proved that the service was regular India would want a weekly air mail service. He hoped to extend also to the Cape.

After Sir Eric had proposed this toast he proceeded to propose the toast of the King. And we were then allowed to smoke.

Sir Samuel Hoare, replying for the visitors, in a very amusing speech, alluded to the pioneer work done by Mr. Handley Page and drew particular attention to the fact that on this occasion Mrs. Handley Page had flown from Cricklewood to Croydon in one of the new machines, and as this was the first flight she had ever made it showed her confidence in the latest product.

Referring to Sir Eric Geddes as personifying Imperial Airways he remarked that it was a very fine child for its age though he disclaimed the responsibility for its parentage which had been fathered upon him. He paid a graceful compliment to Mr. Holt Thomas, who was present, as the real pioneer of air line work.

He said that one Imperial Airways pilot had already made 3,000 flights across the Channel. Here one doubts the source of Sir Samuel's information. 3,000 flights would mean crossing the Channel once in every working day for ten years. And even allowing for three or four crossings a day at rush periods the figure would be hard to reach in the seven years during which Civil Aviation has existed. Presumably what he meant to say was that one cross-Channel pilot had flown for 3,000 hours.

Sir Samuel further said that one passenger had made forty journeys to and from the Continent in Imperial Airways machines and that one of the D.H.34s, associated with another pioneer of British Aviation, Captain de Havilland, had flown 310,000 miles in 3,200 hours. In conclusion he said that he hoped the new machines, named after the chief cities of the Empire, would carry to the cities of Europe, not bombs and torpedoes and gases, but a message of peace and goodwill, and he hoped that they would prove to be the forerunners of great Empire air routes.

Subsequent Events.

After that we all went out to the aerodrome, and those who felt inclined were given joy-rides in the new machines.

What with the petrol used in joy-riding and the cost of the lunch, the party must have taken quite a few pounds out of the taxpayers' pockets. But as it produced about half a column in *The Times* and something like three-quarters of a column in *The Daily Telegraph* and quite long notices in a number of other papers presumably the advertisement was worth the expense. But one cannot help thinking that a similar amount of money spent in judicious advertising (in the non-technical papers—*bien entendu*) might have attracted more passengers.

Still considering that all this tamasha was produced by four machines, which might just as well have been produced between five and seven years ago if proper attention had been given to research and experiment the management of Imperial Airways really did rather well.

Of course it is very ill-mannered to criticise one's hosts in this way, but then one hardly regards Imperial Airways as hosts in the same way that one would regard an ordinary limited company which has to work for its living or go under. Imperial Airways, thanks to its monopoly of the Civil Aviation subsidy, may fairly be regarded in the same way as if it were a Government department, and therefore as a taxpayer and a contributor to its subsidy one feels that one has a certain proprietary interest in it, as well as a perfect right to criticise its methods or its menus.

The Official Excuse.

The excuse for the W10s is that the firm had to have multiple-engined machines of some sort for the 1926 traffic and as no other firm had anything new, or at any rate was unable to guarantee delivery of anything new, in time for the traffic, the directors felt justified in ordering more powerful versions of the old W8bs. And so, by a species of reversion to type, Handley Page Ltd. produced yet another variation of the original W8.

How little real progress they show is indicated by the fact that for the fourteen passengers they want 900 horse power, so that we are still playing about with 50 horse power per passenger. One has been told that these machines will maintain their height, or lose height very slowly, when flying on one engine alone, and that therefore when both engines are running they have a very considerable reserve of power so that the engines are not highly stressed and are therefore less liable to break down.



THE CELEBRATION.—Sir Samuel Hoare, The Hon. Peter Larkin, Lady Maud Hoare and Sir Eric Geddes after the naming of the "City of Ottawa."


LEONARD BRIDGMAN
FAIREY
AVIATION·CO·LTD
HAYES
HAMBLE

That is quite a specious argument. But when we have got down to 30 horse power per passenger for full power, and use only 20 horse power per passenger at ordinary cruising speed, then we may begin to think that the design of civil aircraft is going ahead. Until then progress is simply standing still.

Incidentally the stillness of progress was again emphasised by Mr. Perry, of the A.D.C. Aircraft Ltd., who came out on the 1918 type Martinsyde with a modern engine and proceeded to show rather better speed and climb than is obtained from our modern fighting machines.

An American Visitor.

An interested spectator of the proceedings was Mr. Lester D. Gardner, the Proprietor of *Aviation*, of New York. With true American courtesy he expressed his admiration of everything which he saw. But, well as one knows Mr. Gardner, one was unable to extract his innermost thoughts on the subject.

Naturally it must have been a little bit difficult for him to make any real comparison between American Civil Aviation and British Civil Aviation. There are no regular passenger lines in America, therefore he would not see anywhere in the States seven multi-engined passenger-carrying aircraft drawn up in line ready for use on an established airway.

Also, probably, he would admit that the lay-out and the general organisation of Croydon Aerodrome, with its suggestion, at any rate, that air lines are as much a matter of everyday transport as are railway lines or steamship lines, is more impressive than anything which can be seen in the States—despite the fact that, so far as passengers are concerned, Croydon owes something more than half its existence to citizens of the United States. But when one comes down to brass tacks and real Commercial Aviation Mr. Gardner could demonstrate that America has us beaten by streets and then some.

The previous evening at the Royal Aero Club, where a few friends had gathered to greet him on his arrival in England, Mr. Gardner had given them a remarkable account of what real Civil Aviation is doing in the United States. Eighteen months or so ago when one was in America one wrote of the immense development which one could see ahead for Civil Aviation in the States, and Mr. Gardner confirmed all one's prophecies.

The number of privately-owned machines which flew to the Pulitzer Meet at Dayton gave some indication of the way in which civil aircraft would be used in the future. And w one was told by people like Mr. Tony Yackey of Chicago, Mr. Jackson, of Dayton, and the Waco people, who sup machines and components to private owners and gypsy fly and so forth, gave one an idea of the amount of business wh was growing up quietly in that country.



A LEADER OF AMERICAN AVIATION.—Mr. Lester D. Gardner, Prime Mover of "Aviation," New York,—the oldest and still leading American aeronautical publication.

Since then, Mr. Gardner has been endeavouring to find just what is really being done in the way of civil flying the States. As there is absolutely no control of Civil A tion in the United States everybody is free to build what likes and fly where he likes and break his own neck or ot people's necks as much as he likes. The result is not me interesting, it is quite astonishing.

America's Astonishing Progress.

As there is no Government control there are no Gov ment figures to be obtained. But Mr. Gardner induced various dealers in civil aircraft to give him information f their books which has put him in touch with practically ev active civilian flyer in the States.

In this way he has acquired a list of over 1,700 (one th sand, seven hundred) civilian owners of aeroplanes. S of them have only one machine and are what one might owner-pilots, using the machines for purely private purpo But apparently the majority of them are people who definit make their living out of their aeroplanes and some of th operate quite a number of machines.

Many of those who were originally merely gypsy fly moving from place to place with Curtiss Jennies now ope from a fixed base and run a regular taxi service or do ae photography or give joy-rides at various points within c fortable flying distance of their bases. So that instead of ing gypsies they are becoming what Mr. Gardner calls "fix base operators." They work very much in the same way the Berkshire Aviation Tours in this country, who have fi themselves at Witney Aerodrome and send their machi to various towns all over England to give joy-rides.

Of the 1,700 flyers whose names he has got, Mr. Gard has had recently definite information from some 300 giv proper returns of the hours and distances which they flown. These three hundred have compiled between ther total of 6,000,000 miles flown, which may be put down pretty nearly 100,000 hours flying. Which is approximat an average of 3,000 hours per operating firm, or individ in the year.

Recently the statement was published in this paper t the Berkshire Aviation tours had carried 32,000 passeng during 1925. This was done with about six machines, and actual hours flown altogether must have come to about 3,(These figures are useful for purposes of comparison beca it is safe to assume that none of the American operat can possibly operate more efficiently than does Mr. F Holmes of the Berkshire Company.

It may be granted at once that there is much more ro for flying in the States than there is here. And it is possi to argue that owing to the comparatively poor railway s vices in the States and to the fact that the American is s posed to be always in a hurry (which he is not) there is m inducement to fly in the States, and that consequently th is more genuine taxi work there than there is here.

Also the population of the United States is approximat double the population of the British Isles.

But even allowing for all that it may seem difficult to plain why there is something like one hundred times as m ordinary private civilian flying in the States as there is the British Isles.

It must be remembered that up to the present there h been no passenger air lines in the States. The U.S. P Office air mail between San Francisco and New York, w its 3,000 miles covered regularly day and night in thi hours, sets us a splendid example of efficient ground orga sation and punctuality. But its aeroplanes are a joke—wh reflects all the more credit on its organiser, Colonel P Henderson, and its pilots and ground staffs.

This absence of passenger lines may possibly account some of the high figures reached by private fixed-base ope tors. But even so there is a very big margin between amount of free flying in the States and the amount of c trolled flying in Great Britain.

What is the Reason?

Some people may feel inclined to explain this margin the fact that there is no control over civilian flying in States and therefore everybody can fly when and where how they please. One is prepared to admit that some of large amount of flying may be explained in that way.

One does not propose at this point to embark on a disc sion as to the merits or demerits of Government control flying, and one will merely remark that one is personally tirely in favour of reasonable control, and that there is v little which is unreasonable in the control which the Ministry exercises in this country.

The real reason for the amount of civil flying which

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done in the States is, one is convinced, the price at which a really decent aeroplane can be bought. It is the old story over again of the cheap American bicycle and the cheap American car, which looks queer but does its job, against the higher-priced and better made English vehicle, which covers no more distance.

We shall always make better bicycles and better cars and better aeroplanes in this country than they make in the States. But we always have a sort of tail to our teams whose products are not up to our own highest standard of design even though they may be very well made. Owing to our expensive methods of manufacture the price is high, and therefore the cheap American machine captures the World's market because it does its job nearly as well as the British product.

How America Does It.

Mr. Gardner gave us a typical example of how these cheap and effective American aeroplanes came into being. He told us the history of the Waco Company. Three young mechanics out of the American Army Air Service started after the War and built themselves an aeroplane round a Curtiss OX engine. They built it so well and it flew so well that somebody promptly bought it and they proceeded to build another. They sold that and then proceeded to build a couple more.

One of the three died and his widow married one of the others, so that the capital interests of the concern are still all in the family. They have been offered quite a considerable amount of outside capital to expand their business but they have preferred to go on steadily on their own lines, using their profits as capital.

To-day they are turning out six machines a week regularly. And they are three hundred machines behind on their orders.

These machines are sold at about 2,500 dollars, which, although it is equal to about £500 at the rate of exchange, represents nearer £300 according to the standard of value of money in the States.

The supply of the good old OX Curtiss engines is running short, so now they build aeroplanes without engines and fit into them the engines of the old Curtiss Jennies and Standards and things which their customers have discarded in favour of the new Waco.

They have agents all over the States and divide their deliveries fairly among the agents. One agent offered to order and pay a deposit upon their whole output for a year but they very wisely refused the offer in order to keep their customers all over the country. That is just one example of many in the States.

A Cleavage in the Trade.

A very well-known English manufacturer who was present at this discussion with Mr. Gardner made the suggestion, with which those present all cordially agreed, that this kind of business marks a distinct cleavage in the Aircraft Industries of all countries. Those who are going to manufacture civil aeroplanes must apparently separate themselves entirely from those who are manufacturing war machines for the Government. One would add on one's own account that this argument also applies to the makers of engines.

The point is that when a firm is manufacturing aeroplanes or engines for the Government and is subject to all the interference and alterations and general hampering and restrictions which are unavoidable in dealing with Government departments, quite apart from the particular brand of cussedness which is peculiar to the Air Ministry expert, all the expense caused by this interference and hindrance, and the hours of unnecessary work and delay caused thereby, must be borne on the cost of the machines. It is a definite overhead charge on production.

Consequently it appears that if we are to produce aeroplanes at about £300 apiece, instead of the £900 which we have to pay for a Moth produced under Government supervision, either the aircraft firms must build their civil machines in an entirely separate factory or else new firms must rise up and build civil machines entirely distinct from the existi Aircraft Industry.

It may be that Mr. Fred Holmes' workshop at Witney w become the first of a number of civil aircraft factories. A perhaps some of the people who are working at Brooklan the original home of the Aircraft Industry, may in time come civil aircraft manufacturers. But, however we arrive it, the fact remains that if Civil Aviation in this country to come anywhere near attaining the proportions, that is say in proportion to the population, that it has reached the States, we have got to manufacture cheaply.

Confirmation.

By the time this article appears Sir Sefton Brancker have returned from the States, full of information on t subject. And one feels certain that he will confirm exac what one has written. He has been shown all the facts a figures with that extraordinary openness which is typi of the enterprising American manufacturer and is so differe from the policy of secrecy which is common to English ma facturers in all lines of business—and is not by any mea solely a characteristic of the Department of Supply and R search at the Air Ministry.

Sir Sefton has stated publicly that he is in favour of remo ing restrictions wherever possible from the design, constru tion and use of civil aircraft. Undoubtedly by removing strictions on the construction of engines and aeroplanes a depending on the fact that each firm must uphold its own putation if it is to continue in business, a great deal of e pense could be saved.

Engines in the class of the Cirrus and the Bristol Cher and the new Blackburne could be produced at a fraction the cost if the firms had a free hand. And with firms of su class one is perfectly certain that the engine would be ju as good and just as reliable as anything that is produced unc Air Ministry supervision.

We cannot expect to have such an enormous market aeroplanes for use in this country as exists in the Stat But history always repeats itself, and the same thing mig have been said about the use of motor-cars twenty-five ye ago. To-day we use motor-cars very nearly in the same p portion to our population as they are used in the Stat And if there is the aeroplane business to be done in the Sta we shall certainly use aeroplanes in proportion in t country.

One hopes that these facts and figures, which are bou in due course to be confirmed by Sir Sefton Brancker, eith in an official report or in speeches from time to time, will g both manufacturers and prospective users of civil aeroplan something about which to think in the immediate future.

(To be continued.) C. G.

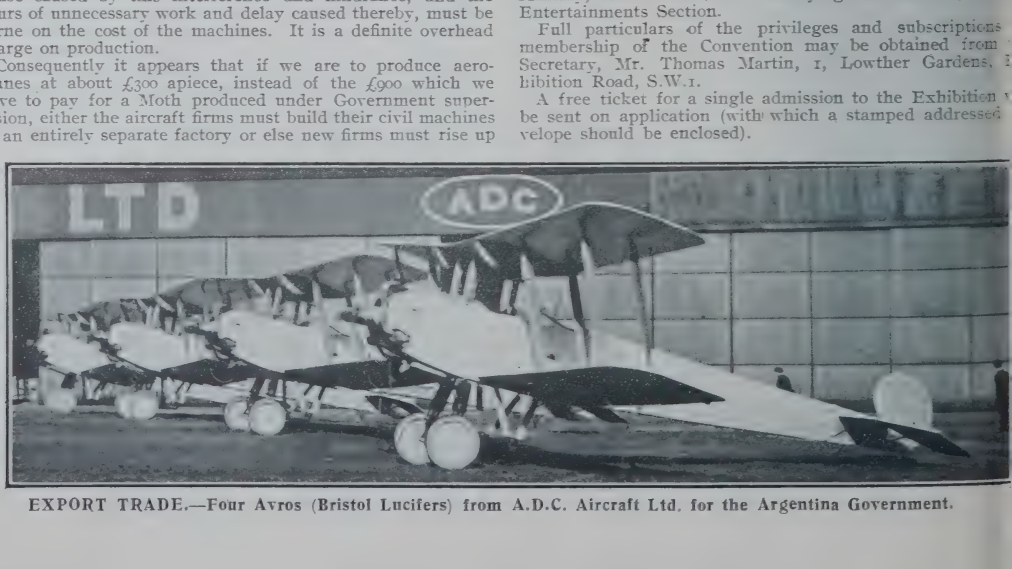
THE OPTICAL CONVENTION.

The Executive Committee of the Optical Convention a nounces that the third Optical Convention will be held at t Imperial College of Science and Technology, Imperial I stitute Road, S.W.7, during the week beginning Apr. 12.

The activities of the Convention will include the Pre dential address, meetings for the reading and discussion papers on subjects of an optical character, lectures of a pop lar character, exhibits of British Optical Instruments incl ing Astronomical Instruments, Telescopes, Cameras, Nauti Military, Aeronautical and Surveying Instruments, and Entertainments Section.

Full particulars of the privileges and subscriptions membership of the Convention may be obtained from Secretary, Mr. Thomas Martin, 1, Lowther Gardens, E hibition Road, S.W.1.

A free ticket for a single admission to the Exhibition w be sent on application (with which a stamped addressed velope should be enclosed).



EXPORT TRADE.—Four Avros (Bristol Lucifers) from A.D.C. Aircraft Ltd. for the Argentina Government.

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RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

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THE ROYAL AIR FORCE.

The London Gazette.

Mar. 30.

General Duties Branch.—Flt. Lt. P. J Clayson, M.C., D.F.C., is granted a perm. comn. in this rank (Jan. 1). The following Plt. Offs. are promoted to the rank of Flg. Off. :—C. W. Martin (Feb. 8); G. D. Middleton, A. E. Haes, A. G. Pickering (Feb. 15).

The following Plt. Offs. on probation are confirmed in rank :—L. R. Mizen, A. W. L. C. Allen, H. T. Andrews, J. W. Bayes, A. M. N. David, T. O'N. East, C. S. Horne, H. A. Howes, W. F. Lovering, C. R. McEvoy, E. A. Swiss, A. E. Taylor, E. M. Thompson, F. B. G. Walker (Mar. 12); S. A. Thorn (Mar. 21).

Group Capt. M. G. Christie, C.M.G., D.S.O., M.C., is placed on half-pay, Scale A (Apr. 1); Flt. Lt. M. G. McL. Cahill-Byrne is placed on the retired list on account of ill-health (Mar. 31).

The following Flg. Offs. are transferred to the Reserve, Class A :—P. K. Campbell, A. B. Cree, E. S. Edwardes, C. Gardner (Mar. 29); H. S. C. Bassett, S. H. G. Trower (Apr. 1). Flg. Off. B. C. Duke relinquishes his S.S. comn. on account of ill-health (Apr. 1); Plt. Off. on probation G. H. C. Keay resigns his S.S. comn. (Mar. 31).

Stores Branch.—Flg. Off. C. W. Rugg is granted a perm. comn. in this rank (Mar. 31); Flg. Off. C. P. Wingfield is confirmed in his appointment in the Stores Branch and is granted a perm. comn. in this rank (Mar. 31); Plt. Off. A. J. Walker is confirmed in his appointment in the Stores Branch and is promoted to the rank of Flg. Off. and is granted a perm. comn. in this rank (Feb. 10).

Accountant Branch.—Plt. Off. on probation G. Goodall is confirmed in rank and is promoted to the rank of Flg. Off. with effect from Feb. 23, and with seniority of Nov. 10, 1925.

Medical Branch.—Flg. Off. A. Dickson, M.B, is granted a perm. comn. in this rank (Mar. 31).

Chaplains' Branch.—The Rev. D. H. Gillan, M.A., B.D., relinquishes his S.S. comn. on ceasing to be employed and is appointed an hon. Chaplain to the R.A.F. (Apr. 1).

Reserve of Air Force Officers.—A. W. Lindsay is granted a comn. in Class BB, G.D. Branch, as a Plt. Off. on probation (Mar. 30). Flg. Off. C. R. McMullin is confirmed in rank (Mar. 22). The following Flg. Offs. are transferred from Class A to Class C :—D. W. Forshaw (Mar. 18); J. J. Comerford (Mar. 26); L. W. Allen (Mar. 30); C. H. Bird (Mar. 30); W. I. Hannon (Mar. 30).

Flt. Lt. B. C. Meates relinquishes his comn. on completion of service and is permitted to retain his rank (Mar. 22). The following Flg. Offs. relinquishes their comns. on account of ill-health, and are permitted to retain their rank (Mar. 31) :—J. C. Bulteel, G. H. E. Roxburgh.

The comn. of Plt. Off. on probation T. Salway is terminated (Mar. 30).

Appointments.

Week ending Apr. 5.

General Duties Branch.—Air Commodore E. R. Ludlow-Hewitt, C.M.G., D.S.O., M.C., to R.A.F. Staff College, Andover, supernumerary, pending appointment as Commandant, 20/3.

Wing Commanders F. H. Unwin, O.B.E., to No. 7 Group H.Q., Andover, for Technical Staff duties, 1/4. R. Leckie, D.S.O., D.S.C., D.F.C., to H.Q., Mediterranean, supernumerary, pending posting for duty as Senior Air Force Office in H.M.S. *Hermes*, 16/3.

Squadron Leaders A. F. Somerset-Leeke, to No. 1 School of T.T. (Apprentices), Halton, 22/2. T. E. B. Howe, A.F.C., to H.M.S. *Furious*, 1/9. K. M. St. C. G. Leask, M.C., to No. 24 Sqdn., Kenley, 25/3.

Flight Lieutenants T. Henderson, M.C., A.F.C., to No. 58 Sqdn., Worthy Down, 6/4. H. C. Irwin, A.F.C., to R.A.F. Depot, 19/3. H. W. St. John, D.F.C., to H.M.S. *Furious*, 1/9. E. B. Grenfell, A.F.C., to Air Ministry, 6/4. F. F. Garraway, to No. 2 Wing H.Q., India, 24/2. J. W. Hosking, M.B.E., to R.A.F. Reception Depot, West Drayton, 5/4. W. F. Dickson, D.S.O., A.F.C., to R.A.F. Staff College, Andover, 15/3. G. C. O'Donnell, D.F.C., to No. 1 School of T.T. (Apprentices), Halton, 1/4. A. G. Jones-Williams M.C., to No. 100 Sqdn., Spittlegate, 30/3. C. W. Hill, to Station H.Q., Andover, 1/4.

Flying Officers A. W. Crees, to No. 2 Armoured Car Co., Palestine, 25/2. F. H. Astle, to Arm. and Gunnery School, Eastchurch, 1/3. (Hon. Flt. Lt.) R. Kennedy, to R.A.F. Depot on transfer to Home Estab., 27/3. A. D. McDowall, to Station H.Q., Spittlegate, 9/3. W. F. Dry, to Aircraft Depot, India, 19/3. E. A. C. Britton, D.F.C., to No. 43 Sqdn., Henlow, 6/4. S. J. Smetham, to No. 1 Wing H.Q., India, 24/2. G. C. B. Bernard-Smith, to No. 2 Sqdn., Manston, 29/3. T. H. J. Wright, to No. 13 Sqdn., Andover, 29/3. F. E. R. Dixon, M.C., to Aircraft Park, India, 26/2 C. W. L. Trusk, to No. 27 Sqdn., India, 8/2. A. C. Meredith and (Hon. Flt. Lt.) H. T. Herring, to H.M.S. *Furious*, 1/9. (Hon. Flt. Lt.) D. J. Stewart, to No. 4 Sqdn., S. Farnborough, 6/4.

Pilot Officers L. A Walsh, to No. 25 Sqdn., Hawkinge, 6/4. A. R. Leather, to No. 55 Sqdn., Iraq, 19/3. G. N. Hoar, to No. 8 Sqdn., Iraq, 19/3. J. W. M. Nancarrow, to Aircraft Depot, India, 19/3.

Medical Branch.—Squadron Leader H. L. Burton, M.B., to H.Q., Iraq, 18/3. Flying Officers J. P. Hederman, E. J. Mockler, M.B., and M. J. Marren, M.B., to R.A.F. Depot, Uxbridge, 18/3.

Stores Branch.—Flt. Lt. W. R. P. Allen, to R.A.F. Depot, Egypt, 8/3. Flying Officers E. P. Terry, to No 4 Stores Depot, Ruislip, 1/4. M. W. Keey, to Aircraft Depot, India, 19/3.

Accountant Branch.—Flight Lieutenant R. F. C. Metcalfe, to Superintendent of R.A.F. Reserve, Northolt, 1/4. Flying Officer C. G. Prior, to No. 41 Sqdn., Northolt, 29/3.

Fatal Accidents.

The Air Ministry regrets to announce that as a result of an accident at Abu-Sueir, Egypt, to a D.H.9A of No. 4 F.T.S., Abu-Sueir, on Mar. 26, Plt. Off. Ivan Randolph Sweeting was killed and No. 317455 Sjt. Rupert Horrocks, the pilot of the aircraft, was seriously injured and died shortly afterwards

The Air Ministry regrets to announce that as a result of an accident in the sea off Calafrana, Malta, to a Fairey 3D of No. 441 Flight, Mediterranean, on Mar. 30, Thomas Law Guy Bryan, Lieut., Royal Marines, Fl. Off. R.A.F., the pil and sole occupant of the aircraft, was drowned.

The Air Ministry regrets to announce that as a result of accident at Quetta, India, to a Bristol Fighter of No. Sqdn., Quetta, on Mar. 31, Flg. Off. Reginald John Willso the pilot of the aircraft, and No. 344845 L-AC. Arthur Jol Burgess, were both seriously injured and died shortly afte wards.

The R.A.F. Cairo-Cape Town Flight.

The R.A.F. Expedition under Wing Cdr. C. W. H. P ford, O.B.E., A.F.C., which left Cairo on Mar. 1 to fly to t Cape and back, arrived at Bulawayo at 13.15 hours on Ma 29 after a four-hours' flight from Livingstone. The perso nel of the Flight were introduced to the Acting-Governor.

The Flight left Bulawayo on Mar. 31 and arrived at Pa pye Road at midday on the same date.

The Flight left Palapye Road on Apr. 2 and reached P toria in two and a-half hours. At Pretoria the Expediti was welcomed to the Union by Colonel Sir P. Van Ryneve K.B.E., D.S.O., M.C., A.F.C., commanding the South Afric Air Force.

The Flight arrived at Johannesburg on Apr. 5. They we accompanied from Pretoria by 14 machines of the South Af can Air Force. These machines returned to Pretoria witho landing.

The R.A.F. on the Syrian Border.

The Baghdad correspondent of *The Times* in a messa dated Apr. 2, states :—

Recently a combination of Syrian Arab tribes under the Shei Daham has been threatening Iraqi tribes who follow the Sheikh A of the Shammar. British armoured cars were sent to assist Shei Ajil in the event of the Sheikh Daham's crossing the frontier attack him. The officers with the cars were prevented to prevent Sheikh Ajil from making the initial attack or from pursuing a success beyond the frontier.

This morning the Sheikh Daham attacked with about 2,000 m near the frontier post at Al Bidi, which was garrisoned by Shei Ajil's men. The armoured cars were involved in the fighting and considerable execution. When the engagement was at its hottest flight of aeroplanes arrived and joined in the fray. The enemy th immediately retired in disorder across the frontier and was not pursu The losses to the Syrian Arabs are estimated at 45 killed. T number of wounded is unknown.

The Wakefield Scholarship.

The Air Ministry announces :—Sir Charles Wakefie Bart., C.B.E., has generously offered to continue the Charles Wakefield Scholarships, founded by him in 1920, view of the great assistance which has been provided by t benefaction, and the Air Council have gratefully accep this offer.

These scholarships are each of £75, tenable for one year the R.A.F. Cadet College, Cranwell, and are intended to g financial assistance to successful candidates for entry i the College whose parents are in reduced circumstances.

Two scholarships are awarded at each half-yearly ent One of these is awarded on the result of the open competit examination for admission to the Cadet College held in Ju and November, and the other to one of the aircraft appr tices who at the conclusion of their training at the R.A training establishment at Halton are selected twice a y for Flight Cadetships at Cranwell.

Spotted Fever at Biggin Hill.

The Morning Post of Apr. 1 states :—

Cerebro-spinal meningitis, or "spotted fever," has broken out am the men stationed at Biggin Hill Aerodrome, the headquarters of 56 Sqdn. of the Royal Air Force. The camp has been isolated, leave cancelled, and the strictest precautions are being taken prevent any spread of the disease. *The Morning Post* understands at present the number of cases is limited to two or three.

No. 56 (Fighter) Squadron, R.A.F., is commanded by Ldr F. J. Vincent, D.F.C., and is equipped with Gr machines. A Night-Flying Flight equipped with Vick Vimys and Bristol Fighters is also stationed at Biggin H

R.A.F. SPORTS AND PASTIMES.

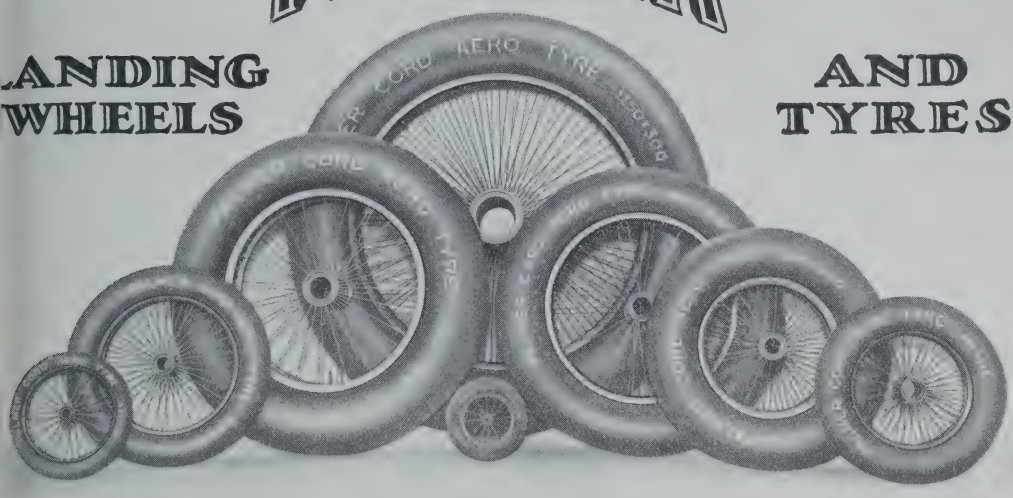
Association Football.

R.N. v. *R.A.F.* :—The Royal Navy beat the R.A.F. at Po mouth on Mar. 24, by 3 goals to nil.

The early part of the game suggested that the Navy wo be beaten, for their opponents attacked continuously. T missed many chances to score, however, and then the N improved. After having considerably more of the play t obtained a lead of two goals at half-time. Davidson s both of these goals. For the rest of the match the Navy things very much their own way and Woodford added a th goal.

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	179	178.	55.	132/46	1000×180	148	220.	80.	Central
300×60	16	111.12	25.4	Central	650×125	119	178.	55.	132/46	,,	149	185.	55.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	155	220.	66.67	Central
,,	172	130.	38.09	Central	,,	188	120.	34.92	Central	,,	166	185.	55.	125/60
575×60	21	160.	28.	Central	750×125	77	178.	44.45	132/46	900×200	107	185.	55.	Central
,,	186	120.	34.92	Central	,,	92	185.	55.	135/50	,,	108	185.	55.	125/60
,,	190	150.	38.09	Central	,,	95	185.	55.	Central	,,	128	220.	66.67	Central
650×65	78	178.	44.45	132/46	,,	99	178.	38.89	132/46	,,	137	250.	80.	Central
,,	79	178.	44.45	Central	,,	112	150.	38.09	Central	,,	157	185.	80.	Central
,,	100	178.	38.09	132/46	,,	176	178.	44.45	Central	,,	202	185.	60.32	Central
,,	101	178.	31.75	132/46	,,	179	178.	55.	132/46					
600×75	21	160.	28.	Central	800×150	161*	185.	55.	135/50	1100×220	134	220.	66.67	Central
,,	186	120.	34.92	Central	,,	162*	185.	55.	Central	,,	136	250.	80.	Central
,,	190	150.	38.09	Central	,,	163*	185.	66.67	135/50	975×225	192	185.	60.32	Central
700×75	78	178.	44.45	132/46	,,	169†	185.	55.	135/50					
,,	79	178.	44.45	Central	,,	177	185.	55.	135/50	1250×250	133	250.	80.	Central
,,	100	178.	38.09	132/46	,,	183	185.	55.	Central	,,	154	304.8	101.6	Central
,,	101	178.	31.75	132/46	,,	211*	185.	60.32	135/50					
00×100	77	178.	44.45	132/46	1000×150	167	185.	55.	125/60	1500×300	115	304.8	101.6	Central
,,	92	185.	55.	135/50	,,	174	250.	80.	Central	,,	126	304.8	152.4	Central
,,	95	185.	55.	Central	,,	182	185.	55.	Central					
,,	99	178.	38.89	132/46	,,	187	220.	66.67	Central					
,,	112	150.	38.09	Central	,,	201	185.	60.32	125/60	1750×300	139	400.	152.4	Central
,,	176	178.	44.45	Central	,,	210	185.	60.32	Central	,,	191	350.	150.3	Central

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VD (346)

The Rugby Cup.

Henlow v. *Upavon*:—The final for the R.A.F. Rugby Football Cup was played at the Stadium, Uxbridge, on Mar. 29, and resulted in a win for Henlow by a goal and a try to nothing.

Considering that the game was played on a Monday there was a fair number of spectators. Henlow supporters were in the majority but the budding Sergeant-Major with the megaphone was on Upavon's side. He lasted the whole game and finished without a quaver in "Up-Up-Upavon." Both teams received an incessant chorus of encouragement and advice from their supporters which goes to prove that Rugger has been taken to the heart of all ranks of the R.A.F.

Henlow was undoubtedly the better team and thoroughly deserved to win the Cup. The team has been well coached and has evidently trained seriously. Better passing in the three-quarter line would have made them a very good side indeed. The forwards, both in the scrum and in the loose, were splendid.

Upavon was beaten forward. Every scrimmage was a walk-over, or rather a shove-over, for Henlow. But Upavon fought every inch of a losing fight and several times battered their way down to the line, only to lose the ball again at a scrum or a line out. Flg. Off. Colquhoun broke away once or twice and Sq. Ldr. Russell did great work in defence with long, accurate kicking.

The first try was scored by Flt. Lt. Scott in the first half. He ran straight and was well over when he was brought down. The try was converted.

The second half was fiercer and less scientific than the first. Towards the end of the game Upavon began to press and Flg. Off. Adams broke away with a pass from Sq. Ldr. Russell from the scrum. He was tackled in front of the goal and fell heavily, breaking his arm.

Henlow scored one more try, AC. Freeman getting over after some good combined work in the three-quarter line.

At least four of the players were in the R.A.F. team on the 27th. Two matches of this sort inside three days seems a pretty tough proposition. They deserve a month's leave at least.

By the way where was the Cup? Surely one of the non-playing officials of the R.A.F. Rugby Union might have seen that it was retrieved from Flowerdown, who won it last year, brought to Uxbridge and presented to the winners —suitably filled.—C. M. MCA.

The Henlow team were:—Full-back, AC. Hamer; Three-quarters, AC. Freeman, Flt. Lt. Scott, AC. Rees and AC. Castle; Half-backs, L-AC. Moass and AC. Hayward (scrum); Forwards, Flt. Lt. Rose (Captain), Flg. Off. Wintour, Flg. Off. Finn, Cpl. Pimm, AC. Higgins, AC. Knight, AC. Harman and AC. Woodward.

The Upavon Team were:—Full-back, AC. George; Three-quarters, Flt. Lt. Lloyd, L-AC. Young, Flg. Off. Adams and AC. Davies; Half-back, Sq. Ldr. Russell and Flg. Off. Colquhoun; Forwards, Plt. Off. Adams, Flg. Off. Trimm, Sjt. Cole, AC. Mortimer, AC. Dyson, Plt. Sjt. Simpson, F-S. Wilson and Sjt. Jarvis.

Referee: Mr. A. J. Trollope.



THE WINNERS.—The Henlow Team—Flt. Lt. Rose, Captain.



THE RUNNERS-UP.—The Upavon Team—Sq. Ldr. Russell, Captain.

The Women's Royal Air Force.

The Third Annual Re-Union Dinner of the Women's Royal Air Force will be held at the Victoria Mansions Restaurant on Apr. 17, at 7.15 p.m.

Dame Helen Gwynne-Vaughan, Commandant of the W.R.A.F., will be in the Chair and the following guests have accepted invitations:—

Air Vice-Marshal Sir Philip Game, K.C.B., D.S.O., Air Member for Personnel; Air Vice-Marshal D. Monroe, C.B., C.I.E., Director of Medical Services; Sq. Ldr. W. D. Budgen, O.B.E., R.A.F. Records, Lieut.-Cdr. H. E. Perrin, Chairman, Grants Sub-Committee, R.A.F. M.F.; Brig.-Gen. R. H. More, C.M.G., C.B.E., General Secretary, United Services' Association.

Full particulars may be obtained from the General Secretary W.R.A.F. Old Comrades' Association, 5, Buckingham Gate, S.W.1.

A PRESENTATION.

On Apr. 16, Sir William Letts will present to The Lancashire Aero Club a new Avro Gosport biplane, which will be accepted on behalf of the Club by Sir Charles Wakefield. The machine is at the moment receiving the finishing touches at the Avro Works, Manchester, where it is being doped in the Club colours—silver and dark blue.

The Gosport is the latest type of Avro, and the Lancashire Aero Club will have the first of these machines to be delivered. Mr. Bert Hinkler will put it through its paces.

A U.S. AIRSHIP ACCIDENT.

On Mar. 10 the U.S. Army airship T.A.5 fell into the sea off Hampton Roads, Virginia. The crew were taken off by a Government cutter, which subsequently towed the airship to Fort Monroe.

The T.A. class of airship is of the non-rigid type, and was constructed by the Goodyear Tyre and Rubber Co. of Akron, Ohio. It has a cubic capacity of 3,000 cubic metres and is driven by one 90 h.p. Curtiss engine.

THE BAMEL BATHES.

After a varied career the Gloucester Bamel had its first ducking at Felixstowe last week. It had been fitted with the new Gloucester wing radiators and had functioned very satisfactorily with Mr. Courtney as pilot.

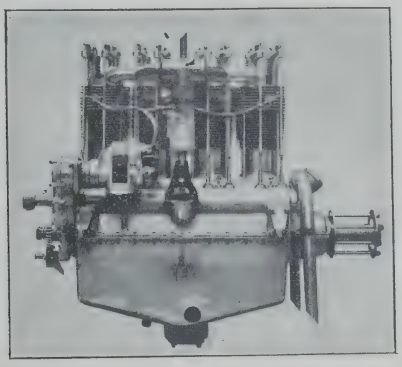
When the tests were concluded and as she was being towed in, the tow-boat went too fast and the floats began to go under. Apparently the boat failed to slow up, so that, as one float went right under, the machine turned completely over. Mr. Courtney, meanwhile, was doing that well-known act as given by performing seals at a circus when they walk round on a large revolving ball. Anyway Mr. Courtney finished on the bottom of the fuselage (then on top) and was not even wet. The machine was luckily undamaged.

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We have received a letter from the Chief Instructor of the Newcastle-upon-Tyne Aero Club, Major L. A. Packman, referring to the reliability of the three A.D.C. "Cirrus" engines in use by the Club, which letter we reproduce below :



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Yours sincerely,

L. A. PACKMAN, Major (Retired),
Instructor to the Newcastle-upon-Tyne Aero Club.

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MR. COBHAM ON LONG-DISTANCE FLYING.

Mr. Alan Cobham opened his remarks at the meeting of the Royal Aeronautical Society on the evening of Mar. 18 by explaining that the events of the past few months had left him no opportunity to prepare his oft-postponed lecture on Long-Distance Flying. He did not intend to go into details of his recent flight, but to put forward a few practical considerations concerning long-distance flying as a commercial proposition.

Long-distance flights fell into two categories—the long-distance non-stop flight, and flight in short stages covering a great distance in the aggregate. The long-distance non-stop flight was generally undertaken to advertise the virtues of a particular aeroplane or engine. It was in fact a "stunt" and not a commercial proposition. This was because it involved the carriage of a very large supply of fuel, and consequently left little or no margin for paying or useful load.

Commercial long-distance work could only be carried out economically by a series of stages, landing and refuelling at intervals. For work of the touring or special trip variety the whole journey would be carried out by one machine, and for this purpose it was essential that the ground organisation for refuelling, etc., should be improved. Even on the best equipped aerodromes in Europe he found that it took at least an hour to refuel and get away again. This was due to the antiquated methods of filling up from two-gallon cans or from pumps which metered out five gallons or less a minute. With proper equipment five minutes should be enough for this job. That this was the case was proved by experience in the last King's Cup Race when they had found that less than two minutes need elapse between being in the air before landing and being in the air again after refuelling, and had been able to load petrol at 45 gallons per minute. Arrangements for refuelling at this rate could be provided to-morrow if they would take the trouble, and it was ridiculous that they should fly at high speeds only to waste unnecessary hours on the ground.

The aeroplane designer could help in this matter by providing adequate and easily accessible filling connections.

Another point for the touring type of work was the need for an engine that would run on any fuel or oil that was available anywhere. The fuel and oil to be found differed from aerodrome to aerodrome.

Long-distance regular services would also be run by stages but with relay machines, passengers and goods being changed over—which could be done in five minutes with proper organisation.

Another drawback of the non-stop flight over long distances was the matter of changing weather conditions. It was much easier to get reasonable information as to the probabilities ahead at landing places fairly close together than over longer stretches. Moreover, long-distance non-stop work was trying for passengers—though as a pilot he always found the first half-hour the worst and finished up on a long flight perfectly fit. From the pilot's point of view the things that made for fatigue were worry, as to such things as petrol supply, engine reliability, etc., difficulties of navigation and bad weather.

These troubles should be reduced in the future. Three engines should remove doubts as to getting through, and materially reduce worry. The pilot could not both pilot and navigate in any proper sense of the word. His own navigation was a compound of dead reckoning and map-reading, but for commercial service there must be a navigator as well as a pilot. A navigator should himself be a pilot of long experience, and he thought eventually the senior grade for a commercial pilot would be Commander navigator. Referring to his recent actual flights the main difference between the Rangoon and the African flight was that for the latter they had to face getting off and landing at altitudes up to 6,000 ft. in tropical temperatures. This could not have been accomplished on the Puma D.H.50 and therefore they had to instal more h.p. There were three ways of meeting this high altitude difficulty—(1) reduce machine loading, (2) increase h.p., (3) use very large aerodromes. The first spoilt the commercial efficiency of the machine, and he thought the best compromise was both to increase h.p. and to enlarge aerodromes. He thought 35 per cent. increase in h.p. and 1,000-yard aerodromes would be adequate. [One suggests that improved wing design and construction would be better and cheaper than either.—C. G. G.]

The events had proved that the air-cooled engine was definitely satisfactory as a commercial proposition. Their engine had encountered the most violent extremes of temperature, and apparently the hotter the weather the better it ran. The Cape flight was the worst he had undertaken from the point of view of forced landing prospects. The central 2,000 miles was impossible commercially, for over 90 per cent. of it, forced landing meant a crash. Egypt and the Soudan were quite good in this respect and in South Africa one could land anywhere.

For work in such districts aircraft must be able to exist in the open without sheds. His machine had actually stood t test excellently—and despite temperatures of 118° in t shade and 160° or more in the sun, the fabric remained perfect condition.

The hottest parts of his journey were not on the Equat but at Kimberley and in the Sudan. The apparent effect altitude and temperature seemed to vary from place to plac and although there was a drop in the performance of t machine it only became noticeable at Mongalla.

A good deal has been said of their alleged trouble in ge ting off at Bulawayo. The aerodrome was small—their tak off gave 400 yards run, and it was his rule never to go trying to take off if he were still on the ground when the was only just room to pull up if he failed. He could ce tainly have taken off, but by risking a crash if anything we wrong, and he refused to do so, and lightened his load.

Cabin ventilation in some of these tropical countries w going to present a real difficulty. The trouble was that t wind was hot. The most comfortable condition was stan ing still in shelter. As soon as you began to move you g hotter. At 100 m.p.h. in an aeroplane you were burnt, a it was only high up that bearably cool air could be reache

Mr. Cobham concluded with a vivid account of his we known 12,000 ft. sandstorm and of certain colossal bum which gave a downward acceleration greater than gravi and extended some 800 feet vertically encountered off t coast of Crete.

The Discussion.

Colonel Edwards congratulated Mr. Cobham on his e tremely valuable work. Ground organisation he agreed w of vital importance and every effort was being made to i prove it, and to save time on the ground. With good grou work, and the three-engined machines which he believ would give regularity and decreased cost great progre might be expected.

Wing Commander T. R. Cave-Brown-Cave said that t subject of ground organisation was at least as important fro the Service point of view as from the commercial. Mr. Co ham's suggestion of relay services however increased t need for ground organisation, and increased the dependen of regularity on local weather conditions at aerodrome Long-distance non-stop flights would allow the pilot deviate to avoid local bad weather, and would often perm him to choose a course on which the wind would help hi where the short stage meant facing a head wind. Also h would passengers stand being hustled from one machi to another at stops? He wanted to know what Mr. Cobha thought the maximum of continuous flying that a passeng would stand. He himself thought they would object to bei confined in a small aeroplane cabin for long journeys, b would not mind an airship that gave room to walk about.

[One fears that Wing Cdr. Cave's ideas are a trifle out date. Modern aeroplanes can go through any weather e cept fog or snow,—and with proper ground organisati fog areas and snowstorms can be avoided even on 250-mi stages. The trouble of boggy ground, owing to tropic rain, can be avoided by making radial runways of concre or tarmac. And cabins of big aeroplanes can be as co fortable as any on airships.—C. G. G.]

Mr. Cobham said that judging from the hustle which ra way passengers displayed getting in and out of trains, the would be no trouble in changing machines in five minut if the arrangements were adequate.

For long-distance work however he thought ma and not passengers were the first object. He thoug the average passenger would stand 500 miles at least—mo if cabins were larger and less noisy. The idea of deviati round a bad weather area was impracticable—if you had deviate your fuel would not last out.

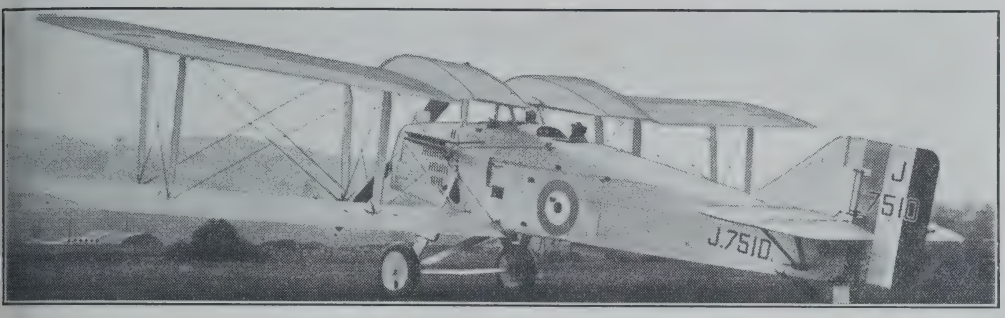
CIVIL MARINE AIRCRAFT.

A paper by Mr. O. E. Simmonds on "The Development Civil Marine Aircraft," read before the Institution of Ae nautical Engineers on Mar 9, drew attention to the ve great and almost inexplicable neglect of the seaplane as civil transport vehicle. This neglect is ascribed by M Simmonds to the fact that the war provided a very mu larger experience of the design and operation of land aircra and that at the end of the war seaplane design was thr years behind that of the land-going type.

Progress since then had been retarded by the poli initiated in the Air Ministry Competitions of 1921 of expe ing civil seaplanes to be amphibious. This led not only practically all recent civil flying boats being burdened wi the extra weight of the wheel undercarriage—which could removed—but involved a marked increase in structure weig which could not.

A few seaplane lines had been operated in Europe—in t Mediterranean, the Baltic, and on the Danube, but the o standing commercial success was the Scadta service Colombia which paid its way.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

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Mr. Simmonds then described a large number of existing civil seaplanes, and in an appendix gave a very complete set of tables showing weights, performance, loadings, and an analysis of the weight component parts.

He then discussed the developments which were now in progress in the construction of seaplanes. Timber was being superseded throughout the structure by metal. The loss by soakage in a wooden hull was so important that within a very short time no wooden hull would be considered for commercial purposes. Certain optimists had claimed great saving in weight for the metal machine, but on the whole he thought that actually metal construction was just about equalling timber in regard to structural weight, and he thought it was probably better at present—for civil work—to use any advantage that metal might have rather to making a more robust structure than actually to saving weight.

Power units in float seaplanes represented much the same problems as in land machines. In the flying boat power-plant arrangement was far from stereotyped and the problems presented were of great interest. He regretted the "taboo" of the tandem engine arrangement in this country. It was idle to talk of a 5 per cent. drop in overall airscrew efficiency when the tandem arrangement easily saved more than 5 per cent. in drag. Equipment of civil marine aircraft was of great importance. In the Sea Eagles on the Imperial Airways' Channel service the equipment over and above standard instruments, including such items as anchors, boat-hooks, bilge pumps, wireless, signalling gear, riding lights, emergency rations, engine and cockpit covers, etc., weighed just about 300 lbs. This was a very serious matter indeed for small machines but would become less so for larger sizes.

The essential requirements of a civil air transport seaplane in order of importance were :—(1) Seaworthiness, (2) Airworthiness, (3) Efficiency, (4) Reliability, (5) Comfort, (6) Longevity, (7) Repairability. The first four were all of vital importance and it might be arguable whether his order was correct. But he maintained that whatever a civil seaplane might be she must be a good boat. In fair weather she would have to lie at moorings between trips, and generally would spend more time on the water than in the air. Requirements for riding at anchor were quite different to those taxying taking off and landing. For the mooring conditions a machine laterally stable (wide-track twin-float type) was probably preferable in medium seas, but for really rough seas the flying boat with adequate wing-tips was the better, despite the inevitable wing stresses.

In taxying the major point was easy turning. A water rudder was essential for a single-engined seaplane, and of tandem twins. With outboard engines all that was necessary could be done with the engine. For touring good weathercock stability was the chief requirement.

The crucial test of seaworthiness was getting-off. In any civil aircraft a tendency to porpoise must be suppressed—not only to avoid risks of premature leaps into the air but to secure passengers' comfort. A requirement essential in itself was ample elevator control and this would allow the pilot to damp out any porpoising that tried to occur. Where heavy ground swells occurred powerful elevator control was essential, and seaworthiness was likely to determine tail plane and elevator design in many cases.

Power loading was of extreme importance. A seaplane carrying 20 lbs./h.p. might or might not take off well in calm water, but in bad seas they would have little chance of getting over their "hump" speed. It was easy to gain a high pay load per h.p. at the expense of general utility, but 17 lbs. per h.p. total weight was about the limit for seaworthiness.

The take-off speed was important although sometimes a secondary consideration. Conditions might vary the permissible speed considerably, but for work in severe speeds a take-off at as low as 50 m.p.h. was desirable. This speed could decrease with increase in size.

Landing was probably the easiest requirement to satisfy. Unfortunately the requirements for the design of a planing bottom for take-off and landing were inconsistent. A flat bottom reduces run and time to take-off but landing shocks are increased thereby. With the Vee bottom landing shocks were reduced but there was a loss in taking off. On the whole British hulls, which had steeper Vees than any others seemed to be the best compromise.

The actual performances of recent flying boats suggested that for the sizes concerned the seaworthiness attained was remarkably good.

Airworthiness fell into two sections, structural and aerodynamic. Except as regards wing covering, structural conditions were the same as for land planes, and the general requirements for a C. of A. were the same in the two cases. Aerodynamically airworthiness included control, stability and performance. It must be admitted that seaplanes had not shone particularly in regard to stability, and the flying boat had been worse in this respect than other types. There was no reason for this case continuing if the machine we designed as a seaplane without reference to land machi standards. The great forward protrusion of the hull gave definite destabilising effect, but a small increase in stabil ing surfaces was the only remedy necessary. It was not t that no seaplane was stable. The Supermarine Swan was garded by pilots as setting a standard in this respect wh many land machines might imitate.

Control presented no particular difficulty. Balancing surfaces would keep control loads on the pilot to sufficien low figures. All seaplanes of 7,000 lbs. or over should h adjustable tail planes. It was essential to give an adequ reserve of control to cover the effect of changes of thr Some seaplanes showed very great changes of trim eng on and engine off. This was usually caused by some pec arity of flow round the tail, and could often be cured by exercise of a little ingenuity.

It was generally believed that the seaplane was esse ally inefficient. He had been horrified by Gene Brancker's statement that the pay load of the D.H.34 3.1 lbs./h.p., of the W.8 3.85 lbs./h.p., and of the Sea Ea only 2.19 lbs./h.p., suggesting that the land plane was s 40 per cent. better than the seaplane.

The D.H.34 had a Napier Lion of 450 h.p., the Sea Ea a Rolls-Royce Eagle of 365 h.p. The power plant of D.H.34 was nevertheless slightly lighter than that of Sea Eagle. The D.H.34 power plant weighed .59 lbs./h less than that of the Sea Eagle. Pilot, instruments and w less were about 650 lbs. in each case, and about .16 lb h.p. less for the D.H.34.

Thus of the 0.91 lbs. per h.p. difference in pay load, .75 was the result of choice of power plant. The Sea Eagle designed as an amphibian, and even with wheels off car extra structure weight on this account. With the same po plant therefore the Sea Eagle could carry just about same pay load as the D.H.34.

The importance of speed was not so much the decrease time on a given journey as in the saving of fuel. For case of two boats each with three Napier Lions on a 500-m journey one cruising at 100 and the other at 85 m.p.h., fuel consumption would be 375 and 441 gallons for the cases. The faster machine would save 15 per cent. of fuel bill, and would have an extra 500 lbs. available pay load. Also the faster machine would make 25 ret trips as against 21 for the slower before making 250 h between overhauls.

Speed was to be gained by reducing resistance, and discussion of how this was to be done was a hardy ann but there was one step which we should tackle—the deve ment of the monoplane boat. It must be admitted that monoplane was no heavier than the biplane, and 15 per c of total drag might be saved by the suppression of bracin

Working out the case of a machine similar to Swan but designed for and fitted with Jupiter engines, total weight of machine for the same power loading w fall by 1,219 lbs. The structure weight could be redu 480 lbs., the power plant by 890, and the fuel for 300 m by 100—a total saving of 1,470 lbs.—which would leave 260 extra available as pay load.

Reliability was intimately bound up with efficiency. large pay load per h.p. was useless if it meant unreli operation. Reliability was now almost entirely a matte power plants, but seaplane design by over-loading eng had been responsible for a good deal of engine trou Machines with too small a margin of speed had to fl full throttle for long periods and engine reliability could be expected. The perils of unreliability over the open were very great. It should usually be possible to land in a rough sea, but what happened after landing was pu a matter of seaworthiness of the boat. The remedy app to lie with multiple engines. The twin-engine seap seemed to give better results than the twin landplane—sev of them flew quite successfully on one engine only.

Comfort in the air presented no problems different f those found in the landplane, but conditions on the w at taking-off may be very unpleasant.

In repairability metal had obvious advantages. It much simpler to cut out and replace a metal plate than t plank a wooden hull.

In conclusion Mr. Simmonds said the modern seaplane worthy of more consideration as a transport than it yet been given. Under the agreement with the Air Co Imperial Airways was bound to run a marine service, bu interest was bound up in the landplane. In a recent letter Alan Cobham—who was not believed to love seaplanes—announced that in his opinion nearly all the great com cial routes were seaplane jobs, and yet Imperial Airways shown no sign of realising the fact.

In the long run Imperial Airways neglect would not ma As soon as all-metal seaplanes of about 50,000 lbs. we were produced there were many shipping firms who w be ready to operate them in conjunction with their own serv

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THE BLACKBURN SPRAT.

Described and illustrated by Leonard Bridgman.

In The Aeroplane for Mar. 17 it was announced that three new types of advanced training aircraft were being constructed for the Air Ministry, and at the same time a brief illustrated description of the Vickers Vendace was published. The other two machines, the Sprat and the Perch, are being built by the Blackburn Aeroplane and Motor Co. Ltd., and George Parnall and Co. of Bristol, respectively. During the course of a recent visit to Brough one was enabled to examine the Sprat.

At a first glance the machine bears a striking likeness to the Swift and Dart types, an illusion that is amply borne out by an examination of the three dimensioned drawings produced herewith.

The design is a normal biplane and as the requirements call for a convertible land or seaplane to be capable of storage in, and taking off and landing on the decks of, aircraft carriers, it is only natural that the Blackburn Co. should incorporate the knowledge gained by them during nearly ten years' development work on deck-flying torpedo machines.

The fuselage embodies the steel-tube down-sloping centre section common to the Swift and Dart types. This structure includes the fuselage from the fireproof bulkhead of the engine back to a point in line with the rear spar of the bottom plane and also the wing-roots of the bottom plane which are braced at their extremities to the top fuselage longerons, the whole being built up as one unit in steel tubes.

To this unit are attached the detachable engine-mounting, the undercarriage or float base, the top wing centre section, and the rear portion of the fuselage.

Apart from the simplicity of assembly and ease of replacement this unit is indeformable, thus minimising upkeep labour and the necessity of constant tuning up, a precaution that becomes more important in a training machine subjected to landings of every possible nature than in a normal service type of aircraft.

The engine mounting, also of steel tube construction, can be detached by the release of four bolts just forward of the fireproof bulkhead, and is so designed that when disconnected from the fuselage it forms its own engine-bed and can be set down on a flat bench or floor.

The advantages of this type of engine mounting are several. Engine changing becomes simplified and even for minor engine adjustments, with tackle available, as it should be on aircraft carriers, it is but an ordinary matter to remove one engine and bolt another into its place, thereby keeping the machine in service and also obviating the necessity of the engine mechanics working perched on the machine or on a high trestle or ladder.

The engine is a Rolls-Royce Falcon of 270 h.p.

The main fuel tank is carried under the fuselage, and t rear half of the tank fits into a recess in advance of the bott plane rear spar which is hung below the bottom fusela longerons. The bottom line of the tank is perpetuated un the rear half of the fuselage by means of formers a stringers.

The radiator is hung on brackets under the nose of t engine and is included within the engine cowling. An op ing just under the airscrew boss provided with shutters allo for the inlet of cooling air. The radiator brackets are su ciently wide, and are provided with the bolt holes necess to allow a tropical radiator to be substituted should the oc sion arise.

The rear half of the fuselage is of normal wire-braced wo construction.

The tail unit is of Dart type and consists of fin, balanc rudder, tail plane and elevators.

The instructor and pupil are accommodated in tandem co pits situated immediately aft of the trailing edge of the t plane centre section, the pupil occupying the forward positi The design is such that the view forward of the pupil in directions is equal to that in the Swift torpedo-carrier wh has proved exceptionally good for deck-landing work, wh good view is essential.

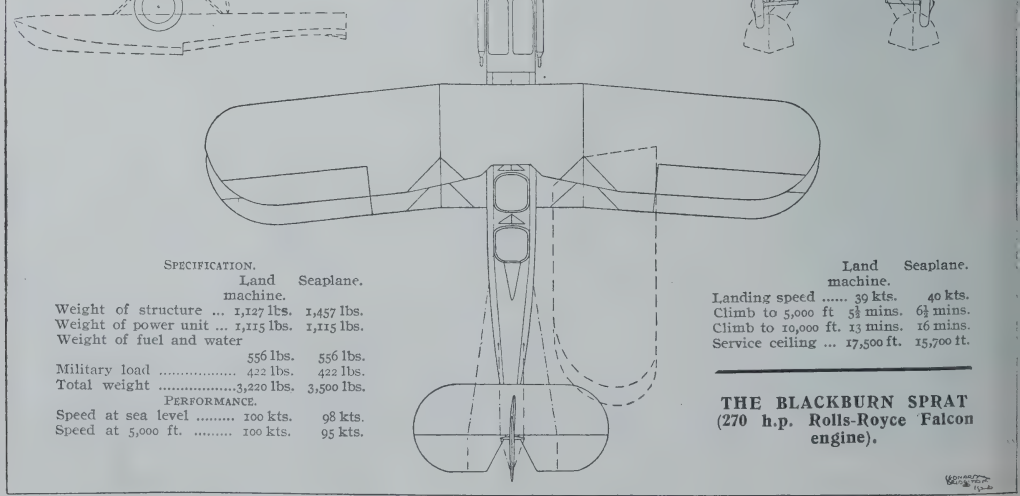
The dual controls are normal, the pupil's controls bei completely detachable in case of necessity.

The rudder bars are adjustable in an interesting mann The rudder cables, instead of being anchored to the extre ties of the bar, are carried round two sets of pulleys and tached to the forward portion of a framework on which t rudder bar is permitted to slide, in a fore and aft moti By means of a worm gear operated with ease by the pil the rudder bar can be adjusted to suit any length leg, t length of cable always remaining constant. This arran ment is shown in sketch form.

The wings are of the single-bay type and can be folded fr a point just outside the points of attachment of the und carriage. The foldable portion of the wings are of the us two-spar wooden construction. The wing section is No. and the wing loading is based on the results of full-scale te on the Dart seaplane, which has a landing speed of 40 kn

Ailerons are fitted to both top and bottom wings. T aerodynamic control surfaces are of ample proportions a are based on those of the Dart seaplane, which according pilots' reports are light and well matched.

The land undercarriage consists of two separate units, on the Dart torpedo carrier. Each unit consists of a st



Specification.

	Land machine.	Seaplane.
Weight of structure ...	1,127 lbs.	1,457 lbs.
Weight of power unit ...	1,115 lbs.	1,115 lbs.
Weight of fuel and water	556 lbs.	556 lbs.
Military load	422 lbs.	422 lbs.
Total weight	3,220 lbs.	3,500 lbs.
Performance.		
Speed at sea level	100 kts.	98 kts.
Speed at 5,000 ft.	100 kts.	95 kts.

	Land machine.	Seaplane.
Landing speed	39 kts.	40 kts.
Climb to 5,000 ft	5½ mins.	6½ mins.
Climb to 10,000 ft.	13 mins.	16 mins.
Service ceiling ...	17,500 ft.	15,700 ft.

THE BLACKBURN SPRAT (270 h.p. Rolls-Royce Falcon engine).



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tube Vee, the front member being an oleo leg, mounted under the extremities of the spars of the bottom steel-tube centre section. A short axle is suspended to the apex of the Vee at the outer end. And bracing tubes running from either end of the axle to the bottom longerons of the fuselage.

Although this type of undercarriage was designed primarily to allow for the carriage and the dropping of a torpedo from the belly of the fuselage without hindrance from a cross axle, the divided type of undercarriage is a useful fitment for a training machine, where a novice, unskilled in the art of differentiating between standing crops and meadow land, may find himself compelled to land while flying cross-country.

The conversion to a seaplane, which is called for in the Air Ministry specification, is made by the substitution of twin floats, the same points of attachment being used for both land and seaplane.

The floats can be constructed either of wood or of duralumin. The metal floats are of the Vee-bottom semi-circular-topped type, with one step. The keelson, extending from the keel to the deck, is made with a number of sectioned diaphragms or formers, the whole being covered with sheet duralumin. A section of a metal float is shown in a sketch.

The form and dimensions of the wooden floats are based on those fitted to the Dart training seaplane, as used at the R.A.F. Reserve seaplane training school at Brough. These floats have been tested in the tank, which tests showed that the floats ran cleanly, had no tendency to porpoise and led to stable conditions when trimmed to take off.

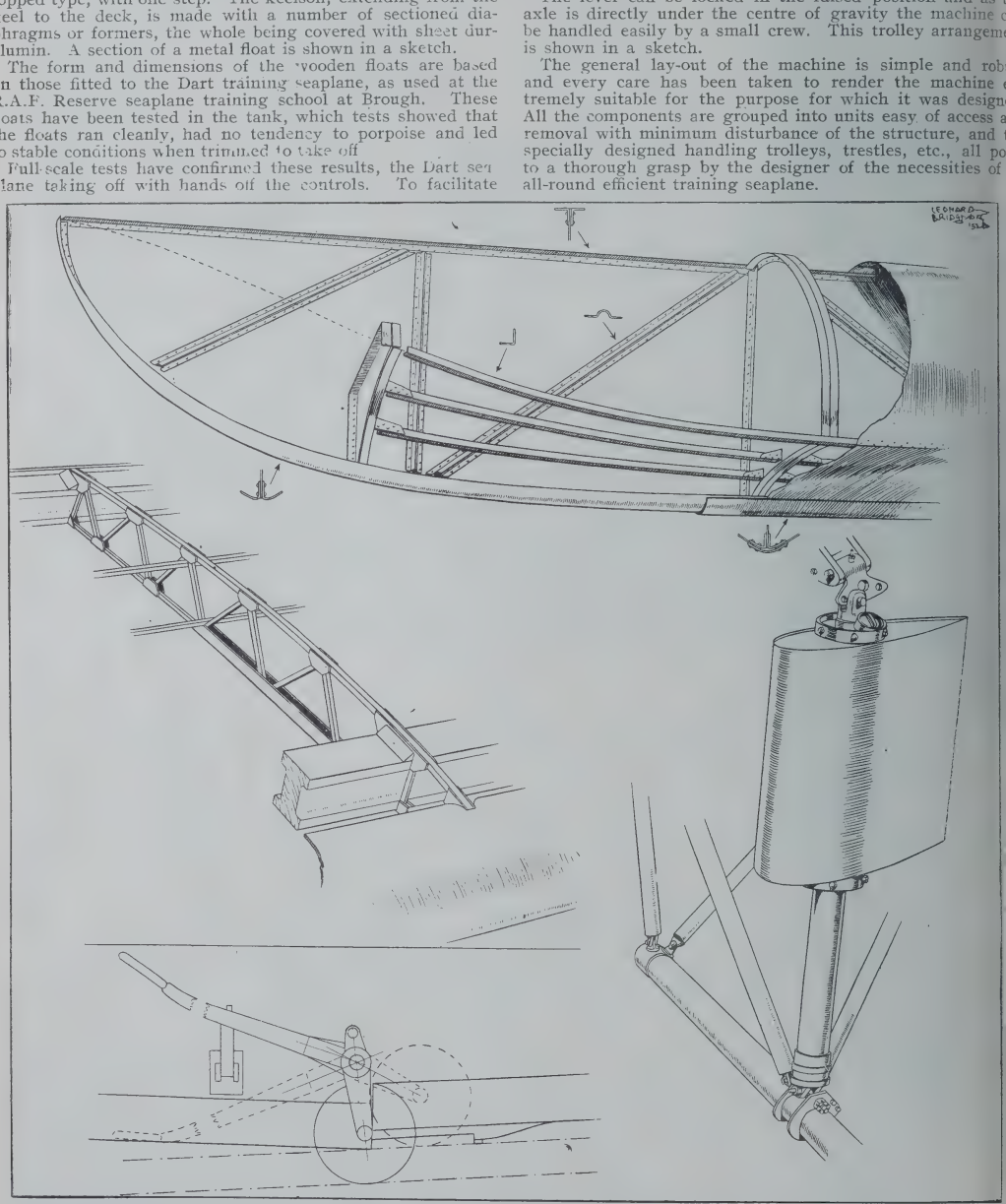
Full-scale tests have confirmed these results, the Dart seaplane taking off with hands off the controls. To facilitate manœuvring at low speeds when more than a moderate wi is blowing water rudders are fitted to both floats.

To allow of the rapid changing of the undercarriages, t trestle positions are arranged for and clearly indicated the machine. An adjustable trestle may be arranged at ea position and the wheels of the trestle locked. The joints a then broken and the trestle cap raised when either und carriage may be removed and the alternate one attached. neither the wheel nor float undercarriage possess cross ax this operation is facilitated as only a half need be handl at a time.

For handling the machine as a seaplane special handli trolleys have been devised, one for each float. Each trol consists of an axle which can pass through the float and t wheels mounted on a long arm, which is pivoted near bottom end to the end of the axle. By raising or lowerin the arm the wheels are brought into contact with or lift clear of the ground.

The lever can be locked in the raised position and as t axle is directly under the centre of gravity the machine c be handled easily by a small crew. This trolley arrangem is shown in a sketch.

The general lay-out of the machine is simple and rob and every care has been taken to render the machine e tremely suitable for the purpose for which it was design All the components are grouped into units easy of access a removal with minimum disturbance of the structure, and t specially designed handling trolleys, trestles, etc., all po to a thorough grasp by the designer of the necessities of all-round efficient training seaplane.

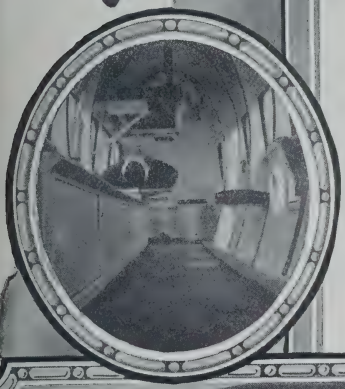


THE BLACKBURN SPRAT.—At the top is shown the construction of one of the duralumin floats, on the left, typical rib construction, bottom left, the handling trolley for the machine when rigged as a seaplane, and on the right, one of the land machine undercarriage units. The extra holes for the attachment of the float struts are shown in the fitting for the land undercarriage oleo-leg.

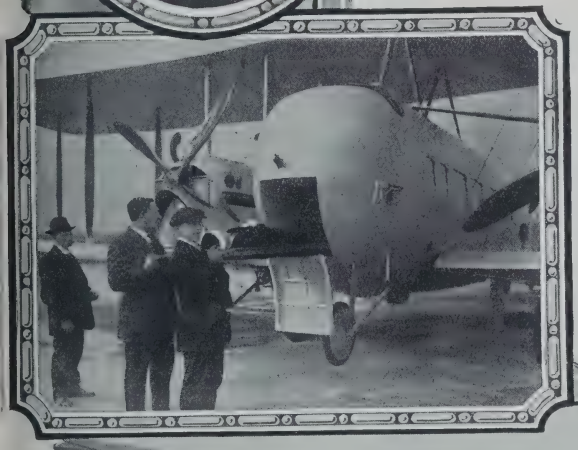
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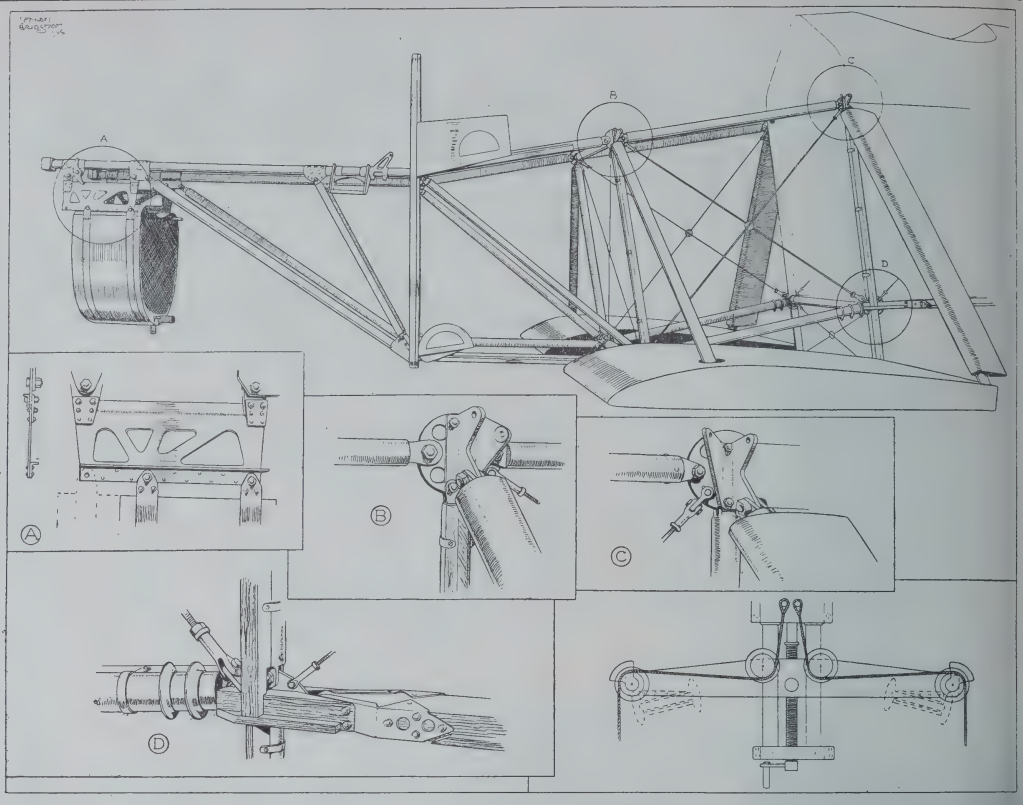
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THE BLACKBURN SPRAT.—At the top is seen the steel tube fuselage centre-section and engine-mounting of the Sprat. In the four lettered spaces are shown enlarged sketches of various fittings, and in the bottom right-hand corner a plan view of the adjustable rudder bar. At A the alternative holes for the attachment of an enlarged tropical radiator are clearly shown.

THE FLYING CLUBS.

The Lancashire Aero Club.

Report for week ending Mar. 28 :—

Flying has been possible on all days except Monday, Wednesday and Friday. Machines used were G-EBLV and G-EBLR.

Twenty-eight members flew. Dual 15 hrs. 10 min. Solo 2 hrs. 5 mins. Tests 55 mins. Total time of machines in air 18 hrs. 10 mins.

Mr. Stack gave instruction to :—C. Agar 1 hr. 35 mins., A. Macnair 1 hr. 5 mins., S. Turner 50 mins., L. Slater 45 mins., B. Smith 45 mins., J. Leeming 35 mins., A. Annable 30 mins., C. Brown 30 mins., F. Gattrell 30 mins., R. Williams 25 mins., A. Goodyear 20 mins., D. Gerrard 20 mins., R. Jackson 20 mins., E. Menzies 20 mins., R. Colley 15 mins., A. Hall 15 mins., D. Dyson 15 mins., A. Wilson 10 mins., G. Moss 10 mins. Total time 9 hrs. 55 mins.

Mr. Cantrill gave instruction to :—C. Barnes 55 mins., C. Agar 50 mins., F. Gattrell 40 mins., H. Stern 30 mins., D Tummers 30 mins., C. Brown 30 mins., B. Smith 25 mins., A. Braid 10 mins. Total 2 hrs. 50 mins.

Mr. Scholes gave instruction to :—S. Crabtree 30 mins., A. Macnair 25 mins., G. Moss 25 mins., F. Davison 25 mins., C. Agar 20 mins., R. Williams 20 mins. Total 2 hrs. 25 mins.

Solo flying :—M. Lacayo 1 hr. 15 mins., B. Smith 50 mins.

Mr. Smith made his first solo on Thursday after just eight hours' dual instruction. His enthusiasm for flying may be judged by the fact that he comes from Blackburn—sixty miles from Woodford—to learn.

The Yorkshire Aeroplane Club.

Report for week ending Mar. 28 :—

Our troubles would appear to be almost at an end. Our engine is doing fairly well, but is hampered by too heavy an airscrew. However, on the principle that co-operation is good, we motored over to the Lancashire Club and poured out our sorrows to their genial Mr. Neville Stack, who very kindly lent us a new airscrew.

Flying times : Test 15 mins., Dual 2 hrs. 15 mins., Solo nil.

The attendance was good and the following had instruction :—Messrs. Lax, T. M. Little, McCalman, D. D. Little and Miss Watson.

On Friday, Mar. 26, the Club's inaugural dinner-dance was held at the Midland Hotel, Bradford. Thanks to the efforts of our Secretary, Mr. Barnes and Mr. Barraclough, this was extraordinarily successful, being well attended, and we had the honour of the presence of the Lord Mayor and Lady Mayoress of Leeds, Mr. and Mrs. John Arnott.

The Newcastle-upon-Tyne Aero Club.

Report for week ending Mar. 28 :—

Very cold weather has prevailed throughout the week and relatively little flying was carried out until the week-end, all on G-EBLY.

Total time for week, 25 hrs 20 mins

Dual with Major Packman, 16 hrs. 25 mins., the following members flying :—Miss Leathart, Mrs. Marcks, Messrs. Irving, J. Bell, Bruce, Middleton, Bainbridge, A. Bell. George, Twine, C. Thompson, Campbell, Thirlwell, L. Smith, Edwards, Whitfield.

"A" Pilots, 7 hrs. 50 mins. Mr. W. Baxter Ellis, passengers Ca and Mrs. Roberts. Mr. R. N. Thompson, with Mrs. Crosbie (amo other passengers). Mr. N. S. Todd, passengers Miss Little, Graham. Mr. R. M. Stobie, with Mr. Moffatt and Mr. Thompson.

Passenger flights, 45 mins. :—Mrs. Middleton, Mr. Longfield Miss Bullock, all with Major Packman.

Mr. Ellis and Mr. Heppell flew to Bamburgh on Monday, land there for tea and then returning to the aerodrome, the trip tak two hours, one hour of which was spent at Bamburgh.

A number of straight flights were made by Mr. Ellis and Thompson on Sunday. Much time was spent on replacing rub shock-absorbers, in which everybody was called into service.

A Scottish Flying Club.

The following letter has been published by the *Glasgow Herald*

Morrone, Bearsden, Glasgow, Mar. 2

Sir,—Permit me the privilege of your columns to raise the subj of a Scottish light aeroplane club.

A year has passed since the Air Ministry offered to assist in formation of six light 'plane clubs—five for England, one for Scotla

A public meeting was called to consider the matter for Glasg but the attendance was not encouraging, and there was no great play of enthusiasm. However, a small committee was formed to vestigate further, and it was found that at that particular time year ago) the formation of a Glasgow flying club could not be rec mended. It is thought the time has arrived when the matter sho be again considered.

The five English clubs are all formed and functioning successfu and such is the keen aviation interest in the South that a mov now being made to form a light airship, a light seaplane, and more light aeroplane clubs, the last four independent of Governm aid. Northern Ireland also have their flying club, while in Scotl there are no signs of any headway being made.

The help of the Air Ministry towards forming a Scottish club not on offer indefinitely, but is liable to withdrawal whenever Ministry may think fit; and if withdrawn the prospect of havin flying club for Scotland will receive a decided set-back.

There is no doubt that the light aeroplane clubs being the m successful method to bring home to our citizens what aviation me in the progress and safety of our great Empire.

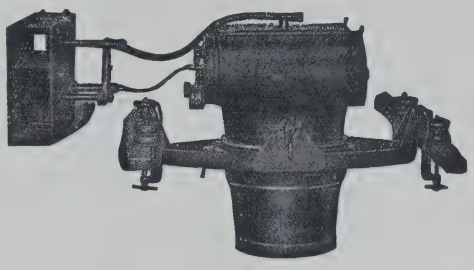
The writer proposes that the formation of a Scottish flying c should be again considered, and those who will support in any v whatsoever please communicate with the undersigned, and, if response warrants, no time will be lost in taking the necessary act towards the formation of a flying club.

It may be that there are those who are doubtful of the club machi now used in the South; but if a keen desire is shown the writer go into the matter of bringing one of these club machines to Glas for examination and proving their wonderful flying capabilities.

(Signed) R. C. Donaldso

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ANALYSIS OF FIGURES FOR THE WEEK ENDING MARCH 28

Trips per Day.—Monday, 13; Tuesday, 12; Wednesday, 12; Thursday, 9; Friday, 10, Saturday, 11; Sunday, 8.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 37, passengers 175, freight 10 tons.

AIR UNION:

Paris—London: Machines 26, passengers 90, freight 8 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 20, freight 1½ tons.

SPECIAL: Nil.

Total number of trips by British Machines, 37, carrying 175 passengers. Foreign Machines, 38, carrying 110 passengers.

Comparative Figures:

Week ending Mar. 28.

Machines, 75; Passengers, 285; Crews, 100; Total personnel, 385.

Corresponding week, 1925:

Machines, 89; Passengers, 259; Crews, 105; Total personnel, 364.

Corresponding week, 1924:

Machines, 58; Passengers, 134; Crews, 100; Total personnel, 234.

Corresponding week, 1923:

Machines, 85; Passengers, 371; Crews, 156; Total Personnel, 527.

Corresponding week, 1922:

Machines, 66; Passengers, 177; Crews, 105; Total personnel, 282.

Corresponding week, 1921.

Machines, 48; Passengers, 162; Crews, 60; Total personnel, 222.

Note.—Owing to the fact that the Easter habits of the postal authorities are singularly like our own, this week's table must be held over until next week.

Croydon Notes.

As much of this paper is already devoted to happenings at Croydon, and owing to that Easter feeling, these notes are necessarily abbreviated.

The twin-engined feeling is now on everyone and when, during the Hellopha Tamasha last Wednesday, Lt.-Col. Minchin and Mr. O. P. Jones arrived together on a brace of 340 they were so heartily ashamed of themselves that they flew wing-tip to wing-tip to disguise themselves as a twin-engined machine. In fact so overcome was Col. Minchin that he rediscovered the ancient Roman road which runs up the middle of the aerodrome.

After surviving the banquet, Mr. MacIntosh, who has been flying continuously on the air route since September 1919, and is according to official record the première pilot on the service, very kindly took one up in the front seat of G-EBMM. This machine—which doubtless will be known on the ether as "Emma Emma," was christened the *City of Melbourne*.

The fourteen passengers having been duly installed and the engines run up, Mr. MacIntosh taxied to the South-East corner of the aerodrome, turned her into the wind and did the equivalent of stepping on the gas. In about three lengths the machine got off the ground and was some 300 ft. up before passing over the boundary of the aerodrome. We climbed in a steady climbing turn to 1,200 ft. and headed for the Crystal Palace still climbing.

The machine climbs quite nicely at 80 m.p.h., cruises at 90 m.p.h. and the top speed level appears to be about 108 m.p.h. One understands that speed has been sacrificed to ensure a really good take-off under the worst conditions with a full load. There seems to be a crying need for the variable pitch (and purpose) airscrew.

The silencing arrangement of the Napiers is really good, which rather points to the fact that so far the Air Ministry technicians have avoided these machines or are not doing what they imagine to be their duty in their own way.

By the time we reached the Crystal Palace we were about 2,000 ft. high and at that altitude we returned to the aerodrome over the top of which Mr. MacIntosh closed the throttle and came down with a well and comfortably-banked spiral glide and landed without a jar.

Though not in any way revolutionary the W.10 is a thoroughly adequate and serviceable air-liner in every way and as they say of good plays, it should fill the bill for many year to come.

People do not at the moment seem too keen on three-engined machines. The episode of the Hampstead whose starboard engine stopped so suddenly that the airscrew went on ahead has rather shaken people up. Unfortunately, however, it seems doubtful whether we shall have an opportunity of hearing what really happened to this engine.

During the week-end, by way of spreading the Gospel Aviation, Imperial Airways Ltd. started a joy-riding sh with the new W.10s, and during the holidays 280 people a quarter of an hour's flight each. On Monday evening one came up Purley Way "Emma Robert" was still a and one of the Surrey Flying Service's Avro was busy giv 5s. "ups and downs."

At A.D.C. Aircraft Ltd. Mr. Perry made three tests and demonstration flight on a Martinsyde-A.D.C.1 on Tues and also he gave a demonstration on a Nimbus-D.H.9.

By the way the Nimbus has now passed its official t tests under Air Ministry observation.

On Wednesday Mr. Perry was demonstrating the Mar syde-A.D.C.1 at the Tamasha and again the next day he busy testing.

The Seven Aero Club's D.H.51 has now been fitted with Airdisco engine and was ready to be collected by Mr. Bo G.

MR. COBHAM'S ENGINE.

The Jaguar engine used by Mr. Cobham on his Londo Cape Town—London flight was returned to the maker's wo at Coventry, put on the test bench for the taking of a po curve, and then stripped and examined by A.I.D., after wh the components were sent to the Armstrong-Siddeley Mot showroom in Bond Street for exhibition.

Visual examination of the components shows little or sign of the engine having done more than just run, if excepts the fact that a large proportion of the exterior of engine—particularly of the cylinders—is heavily coated w a mixture of thickened oil and dust—the latter presuma relics of the famous sand-storm.

There are a few unimportant scratches in the white m of the big ends—also possibly the result of sand-storms—no signs of damage to the crankpin. A.I.D. reports disc the following amounts of wear:—

Gudgeon pin bushes.—Bores O.K., outside dia. .0005 in .002 in.

Exhaust valves.—Three only stems worn .0005 in.

Inlet valve guides.—Two worn.

Exhaust valve guides.—Two worn.

Anchor pin bushes.—Outside diameter worn .0005 in

Tappet roller pins.—Worn .0002 in.

Main crankshaft bearings.—Rollers worn .00025 in.

No other wear was measurable.

On the bench the engine developed the same power cu as it had given prior to starting on the flight, with consumption between .56 and .58 pints per b.h.p. hour an oil consumption of .6 pints per hour.

[This is interesting to compare with the A.I.D. report the Bristol Jupiter after 25,000 miles' flying. The report al does not state what parts were renewed at Athens.—E

THE OVER-SEAS LEAGUE AND MR. COBHAM.

The Central Council and Members of the Over-Seas Lea are entertaining Mr. Alan Cobham to luncheon at Criterion Restaurant on Friday, Apr. 16, at 12.45 p.m., w Sir Ernest Birch, K.C.M.G., will take the Chair.

A WELCOME TO COMMANDANTE FRANCO.

On April 5, Commandante Franco, Lieut. Ruiz de Alda, sign Duran and Mechanic Rada, who, between Jan. 22 Feb. 10 flew from Spain to Buenos Aires on a twin-Nap engined Dornier Wal flying boat, arrived at Palos de Mog on board the Argentine cruiser *Buenos Aires*. H.M. the K of Spain and the Infante Don Carlos were present to rec the aviators.

After the ceremony of welcome, H.M. the King toge with the aviators attended a Te Deum service in the chu of Palos de Mogner. This was followed by a banque Huelva, and the aviators were subsequently awarded a g reception on arriving at Seville.

Two representatives of the firm of D. Napier and S Messrs. C. G. H. Winter and F. H. Jones, were present.

In addition to making a presentation of plate to the C of the Napier-engined *Plus Ultra* they delivered a spe message of greeting from Sir Samuel Hoare, in which British Air Minister said:

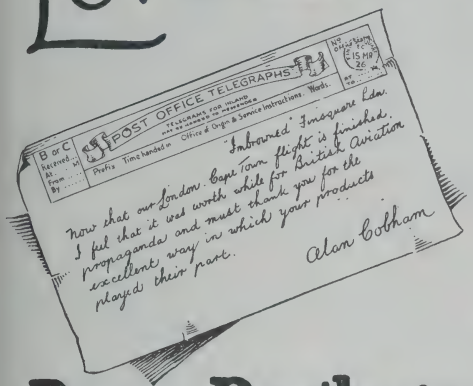
I am particularly glad that the engines in this great flight sh have been British and I hope that there will always remain a alliance between Spain and England in the field of aviation.

BRUSSELS—KINSHASA—BRUSSELS.

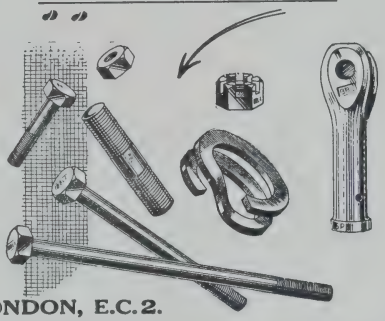
On Mar. 29, Lieuts. Medaets, Verhaeghen and mech Coppens who flew from Brussels to Kinshasa on Mar. 9-2

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a Breguet XIX biplane (500 h.p. Hispano-Suiza engine), began their return flight to Brussels.

On Mar. 30 they arrived at Mongalla.

On Apr. 2 they reached Atbara after a nine-hours' flight.

On Apr. 4 they arrived at Heliopolis from Atbara.

COPENHAGEN—TOKYO.

On Mar. 31 Lieuts. Herschend and Botved, of the Danish Army who are attempting to fly from Copenhagen to Tokyo on two Fokker C.V biplanes (450 h.p. Lorraine-Dietrich engines) arrived at Calcutta having flown from Karachi in 13½ hours, with only one stop en route, at Agra.

On Apr. 2 they arrived at Rangoon.

On Apr. 4 they left for Bangkok.

At Hmawbi 28 miles from Rangoon Lieut Herschend was forced to descend owing to engine trouble and in landing in a rice-field damaged his radiator, undercarriage and airscrew. Lieut. Botved proceeded and arrived at Bangkok.

Lieut. Herschend has intimated that he will transport his damaged machine by boat to Bangkok and after repairs have been carried out will await Lieut. Botved's return from Tokyo and accompany him on the return flight to Copenhagen.

MADRID—MANILA.

On Apr. 5 Capt. Rafael Martinez, Capt. Eduardo Gonzalez and Capt. Joaquin Loriga left Madrid on three Briguet XIX biplanes (450 h.p. Hispano-Suiza engines) in an attempt to fly to Manila, Philippine Islands.

On the same day they reached Algiers.

THE FIRST ITALIAN CIVIL AIR LINE.

On Apr. 2 the first Italian commercial air line was opened. This service will operate between Turin and Trieste.

Two seaplanes, loaded with mails and passengers, left each of the terminal stations and met at Pavia, an intermediate landing station. Here the pilots of the machines were received by Signor Mussolini who had travelled down from Milan to participate in the celebrations.

Owing to engine trouble only two machines left Pavia, one in each direction.

The journey from Trieste to Turin takes four and three-quarter hours.

NEW COMPANY.

Steel Wing Company Ltd.—Private company. Registered Mar. 29. Capital, £15,000 in £1 shares. Objects: To carry on the business of manufacturers of and dealers in aeroplanes, balloons, airships and flying machines of all kinds, etc., to acquire business carried on by D. J. Mooney, at Nightingale Grove, Hither Green, S.E.13, as the Steel Wing Co., 1921, and certain patents for inventions in connection with aeronautics or other subjects, the property of the said vendor. The directors are: D. J. Mooney, Effingham, Surrey, engineer. D. H. Emby, Hunstanton Lodge, Downe, by Farnborough, Kent, engineer. H. Burroughs, address not stated. Sir John Mooney, K.B.E., address not stated. D. J. Mooney is permanent managing director and chairman with not less than £1,000 per annum and 10 per cent. of the net profits as remuneration. Qualification £100. Remuneration of directors as fixed by the Co. Sec.: D. H. Emby. Regd. Office: Nightingale Grove, Hither Green, S.E.13.

PERSONAL NOTICES.

Deaths.

BRYAN.—On Mar. 30, off Calafrana, Malta, as the result of a flying accident, Lieut. Thomas Lawe Guy Bryan, Royal Marines and Flg. Off., R.A.F.

BURGESS.—On Mar. 31, at Quetta, India, as the result of a flying accident, L.-AC. John Burgess, R.A.F.

HORROCKS.—On Mar. 26, at Abu-Sueir, Egypt, as the result of a flying accident, Sjt. Rupert Horrocks, R.A.F.

SWEETING.—On Mar. 26, at Abu-Sueir, Egypt, as the result of a flying accident, Ivan Randolph Sweeting, Plt. Off., R.A.F.

Mr. Sweeting joined the R.A.F. with a short service commission on July 7, 1925, and was posted to No. 4 F.T.S., Abu-Sueir, Egy for a course of instruction.

WILLSON.—On Mar. 31, at Quetta, India, as the result of a fly accident, Reginald John Willson, Flg. Off., No. 28 Sqdn., R.A.F.

Mr. Willson was with No. 4 Sqdn. at Farnborough in 1921 and posted to No. 207 Sqdn. at Eastchurch, in September, 1922. November, 1924, he went to India and joined No 31 Sqdn. at Amba He was a qualified Signals Officer.

Forthcoming Marriage.

PRIOR—MILLER.—The engagement is announced between Flg. Cecil George Prior, only son of Mr. and Mrs. W. G. Prior, of Clapt and Margaret, youngest daughter of Mr. H. S. and the late Mrs. Mill of Stamford Hill.

Births.

BEATSON.—On Apr. 1, at Ashburnham Lodge, Bromham Ro Bedford, to Margaret (*née* Frame-Thomson), the wife of Sq. L B. Fraser Beatson, R.A.F. Medical Service—a son.

MacEWEN.—On Mar. 28, at Northacre, Banstead, Surrey, the w of Group Capt. N. D. K. MacEwen, C.M.G., D.S.O., R.A.F.—a daught

PERRY-KEENE.—On Mar. 31, at Priory Cottage, Leysdown, She ness, to Katrine (*née* Silberrad), wife of Flt. Lt. A. Perry-Kee R.A.F.—a daughter.

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INCORPORATING AERONAUTICAL ENGINEERING
Edited by C.G.Grey

Vol. XXX. No. 15. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"LOENING 'EM."



HOW IT IS DONE: A Loening Amphibian Flying Boat, with Inverted Liberty Engine getting off.—For a long time aeronautical engineers have been discussing amphibians and also inverted engines. Mr. Grover Loening has combined the two with very good results, and this machine has a performance equal to that of the U.S. Army's standard two-seater land machine—of remote De Havilland origin. Such a performance shows real progress, so the office jester may be excused for remarking that, so far as aeronautical engineers are concerned, it is learning 'em something worth knowing.

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THE AVRO "GOSPORT" has been produced to meet the very real need for a low powered *but* practical training aeroplane for the serious training of pilots.

There are a number of characteristics which are essential in a training machine if it is to produce competent pilots. All these characteristics which are dealt with later, are incorporated in the AVRO "GOSPORT." *There is no lighter or lower powered aeroplane with these characteristics.*

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1—Machine controls are very light and compel instant response to the slightest touch.

2—Performs all aerobatics with precision.

3—Low landing speed.

4—Engine has ample reserve of power.

5—Instruction can be given, and a good landing view obtained, from front *or* rear cockpit. Machine can be flown with equal facility from either.

6—Adequate provision has been made against accidents resulting from bad landings by pupils. The special AVRO undercarriage and the long main skid often prevent serious damage.

7—Strength. Robustness of construction has not been sacrificed to lightness. The "GOSPORT" is essentially a machine capable of withstanding the rough handling inseparable from training.

The engine fitted is the new model 100 h.p. "Monosoupape" with "Y" metal pistons which obviate the fitting of obturator rings.

The AVRO "GOSPORT" is not a "light aeroplane" as generally interpreted, but it is absolutely the lowest powered PRACTICAL TRAINING MACHINE that has yet been constructed. Its performance as a Training machine is beyond comparison.

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APRIL 14, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 15.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s.
Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8s.
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ON THE NORTH POLE EXPEDITIONS.

Of the making of North Pole expeditions there seems to e no end. Personally one has no sympathy with these North ole stunts, for such they are. They serve no particular urpose. They cannot prospect for minerals from the air, nd apart from possible minerals there seems to be no object hatever in going to the North Pole, especially as it has lready been reached on foot by Peary. They seem to be nerely waste of time and money.

One sympathises entirely with a well-known member of an xclusive London Club, formerly an airship officer of the .N.A.S., who, when asked to join an airship expedition to he North Pole replied in his most languid manner, "But hy should we go to the North Pole? It's very cold, and e don't know anybody there."

There is apparently only one way in which air survey of he Polar Regions can be useful. That was very well set orth some time ago by the well-known German scientist, rofessor Bergson, when he did one the honour of calling t this office. He made out a very good case for the particular cheme which he and a number of other men of intellect have t heart. Their scheme is for a regular airship patrol of the olar Regions between Greenland, Iceland and Norway with he idea of observing carefully the movements of the Polar ce, so that, in conjunction with the Meteorological Departnents of the various Governments concerned, the influence f these ice movements on the weather of the North Atlantic night be noted.

By such a system of patrols, carried out over a series of ears, it should be possible ultimately to arrive at an exact cience of weather-forecasting which would be of immense ommercial value to the shipping industries of all nations sing the North Atlantic. And it should be of equal value o the agriculturists. Such a scheme is worthy of all support. he Governments of the various maritime nations should upport it, and so should the great shipping companies hose vessels use those seas.

But such a scheme differs absolutely from mere wild dashes y air from rather uninhabited bases to the totally uninabited North Pole itself. So far as one can see, the only esults to be achieved from these dashes are the personal otoriety of those concerned in them and possibly some comaratively small financial benefit to be derived thereafter from ecture tours and book-writing. They are certainly fine xamples of physical endurance and personal pluck, but there are plenty of ways in which those qualities can be used better for the benefit of humanity.

At present there seem to be three aerial polar expeditions in being.

The first is an Americano-Australian expedition organised by Captain Wilkins, late R.A.F., who was one of the many who attempted to fly to Australia for the prize which was offered by the Australian Government and was eventually won by the brothers Ross and Keith Smith. His flight ended in a forced landing in Crete. He is in Alaska with two Fokker aeroplanes, one a three-engined machine and one a single-engined machine. For some time he was at Fairbanks, Alaska, where he damaged both machines. He intends to start his actual polar flight from Point Barrow.

The second expedition is that of Commander Byrd of the U.S. Navy, who proposes to fly a three-engined Fokker from Peary Land, north-west of Spitzbergen. His intention is to land at the Pole if possible, but if not to fly back again without landing. His pilot is Floyd Bennett. The expedition is being financed by a number of American business men, among whom are said to be John D. Rockefeller and Edsel Ford. He is also said to have the support of the U.S. Navy and Meteorological Departments.

The third expedition is more interesting because it will at any rate give a demonstration of how an airship behaves under polar conditions. It is that of Captain Amundsen, originally one of Doctor Nansen's assistants and himself the first man to reach the South Pole, just before the fatal expedition of Captain Scott, R.N., arrived there.

The airship, which is called the *Norge*, is one of the Italian N.1 type, designed by Signor Nobile. This ship, commanded by the designer and carrying Major G. H. Scott, late R.A.F., who navigated the R.34 to America and back, left Rome at 09.25 hours on Saturday morning, Apr. 10, arrived over the Thames Estuary at 14.00 hours on Apr. 11, and arrived at Pulham at 15.30 hours. Owing to difficulties in landing the ship she was not housed until 18.10 hours.

In the process of landing, the ship on two or three occasions came down close to the shed and went aloft again after the handling lines had been seized by the landing party. Fortunately those who seized the lines had the sense to let go in time and so escaped the fate of a number of people who were killed during and just after the War through catching hold of handling lines and being taken aloft only to let go when they were so high that they were killed by the consequent fall.



ALL THE WAY FROM ITALY.—The "Norge," Capt. Roald Amundsen's airship, on its arrival on Sunday at Pulham, where it narrowly escaped killing some of the well-meaning inhabitants of Norfolk.

Presumably as a matter of international courtesy the Secretary of State for Air, Sir Samuel Hoare, and the Air Member for Supply and Research, Sir Geoffrey Salmond, were at Pulham and received Signor Nobile and his second in command, Lieut. Riiser Larsen, who was with Amundsen's futile flight towards the Pole in a German flying boat last year.

Major Scott is reported as having described the trip as a good performance, but one gathers from the same report that owing to a head wind the speed over the ground was reduced to thirty miles an hour in France. Thirty-three hours for a trip of 1,400 miles does not compare particularly favourably with long journeys by even quite slow aeroplanes. Mr. Bert Hinkler on the Baby Avro did rather better in his trip from England to Italy five or six years ago. Still it will be interesting to see what happens to so slow a ship if she happens to meet a Polar gale.

The N.1 herself is of some slight interest because she the first of her type to visit this country, but the type is new for it was first built in 1923. She has a gas capacity 672,000 cubic feet, she is 348 feet long and is propelled three Maybach engines of 260 h.p. each.

On the trip she carried 21 people and considering that th was no seating accommodation in the control cabin and t everyone had either to stand or sit in relays on the floor judges that the voyage must have been uncomfortable. P haps such close quarters may be better when in Po temperatures.

For the reasons stated at the beginning of these no one hopes that readers of The Aeroplane will forgive one dealing in future issues in a few lines with the future doi of these expeditions, which will doubtless occupy m columns in the daily press.—C. G. G.

ON THE ROYAL AERO CLUB AND THE SPORT OF FLYING.

For a considerable time those who are truly concerned for the development of British Aviation have realised that the Royal Aero Club, though it does its best according to its lights, has failed signally to do what it might have done to further the progress of British Aviation if its management had been in different hands. Since the war it has failed entirely to rouse popular interest in air racing or sporting flying. Despite the members of the aristocracy and plutocracy whose names appear on its council, it has been unable to raise any money worth mentioning either to promote flying in the British Isles or to back up efforts to win international trophies abroad.

Whatever has been done for the betterment of sporting flying in this country has been done by the Trade. And the Trade has every reason to be dissatisfied with the way in which its efforts have been backed, or rather have not been backed, by the Club. The so-called Light Aeroplane Clubs owe their existence to private initiative backed by the Air Ministry rather than to the Aero Club.

It is very hard to locate precisely where the trouble lies. Individual members of the various committees of the Royal Aero Club are quite intelligent. Some of them have been successful in business, which may be taken as proof that they are not lacking in initiative. Others have distinguished themselves in the King's Service, which at any rate is proof that they have intelligence. Yet collectively they have been extraordinarily ineffective.

A long time ago some humorist remarked that the intellectual level of an elective body was always about fifty per cent. lower than that of the average level of the individual members of the same body. One sees the truth of that observation in parliaments, in town councils, in boards of directors and in committees of all sorts over and over again. Which probably explains why a benevolent autocracy is the ideal form of government.

So far as committees are concerned one has always found that a really successful committee depends on having either as its chairman or as its secretary a man of intelligence, foresight, initiative and education. If he be the chairman he has to devote practically his whole time to the work of the committee and has to pull the committee along with him. If he be the secretary he has to persuade the committee, including the chairman, tactfully along the right path. But a committee without the man to guide its destinies has very li chance of real success.

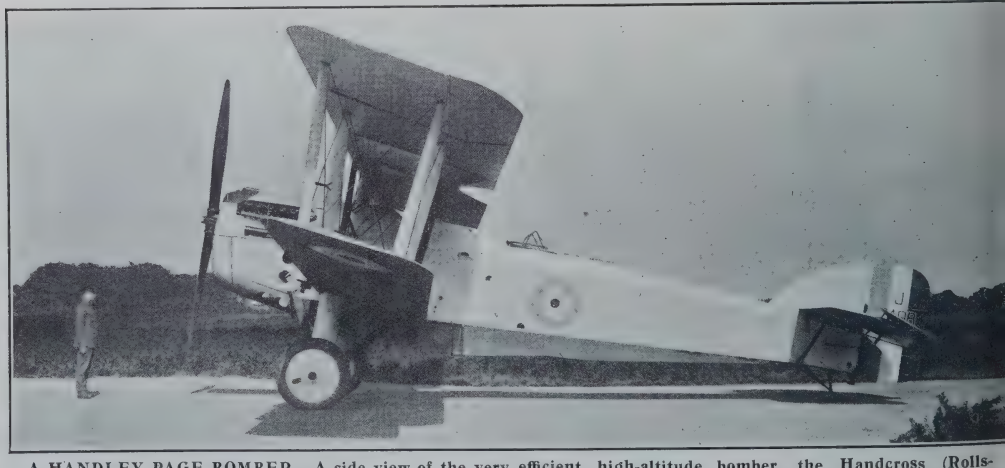
Straws show which way the wind blows, and perhaps key to the lack of success of the Royal Aero Club may found in an incident which occurred on Friday last, Apr. Those who are interested in aviation will remember that last day for challenging for the Schneider Trophy Cont was Mar. 31. Prior to that date the Royal Aero Club had nounced that Great Britain would not challenge the Uni States. And it was also known that France had decided to challenge.

Consequently it was assumed that there would be no ch lenge, and hopes were expressed that the National Ae nautic Association of America would, in that same spirit sportsmanship which was shown by the U.S. Navy in 19 refuse to claim a fly-over and so would give the other nati a chance of challenging for 1927. Some people argued t America's own interests would best be served by not cla ing a fly-over, because if the Trophy were won outright America, the American Trade would lose its chance of dem strating in future years its ability to build speed machi The argument is feeble because America can still go World's Records with land machines and seaplanes, America still has the international Pulitzer Trophy which open to all nations. Nevertheless the argument appeared appeal to some people to be a salve to our national sport conscience and an excuse for not making an effort to the Schneider Trophy this year.

On Apr. 9 a rumour reached this office that Italy had ch lenged the United States. The rumour seemed to be portant because if it were true the fact that the challe had been made would settle at once the question of whet there will be a contest this year or not. And if there is to a contest the natural assumption is that America will the Trophy and keep it.

Consequently one telephoned to the Royal Aero Club ing for confirmation or denial of the rumour. The reply one received was that General Brancker, who returned f the States a few days ago, had said that the Italians had c lenged, but that there was no official information on the s ject.

One suggested that as the matter was of some importa to British Aviation the Club might have cabled to the St



A HANDLEY PAGE BOMBER.—A side view of the very efficient high-altitude bomber, the Handcross (Rolls-Royce Condor), produced by Handley Page Ltd., a firm which is more usually connected with the production of multi-engined commercial aircraft. With a military load of 1,000 lbs. this machine climbs to 19,000 feet in 39½ mins., where it has a speed of 100 m.p.h. Altogether quite a useful military aeroplane.

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Sketch, 3rd Feb., 1926

The Napier "Lion" was the engine used by Commandante Franco on his wonderful flight from Spain to South America, when he covered 6,259 miles in 59½ hours' flying time

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as soon as the rumour reached this country and might have obtained official confirmation. The astonishing reply was that it was not thought worth while to cable to the States for confirmation as we (that is, presumably, the Royal Aero Club and British Aviation in general) are not interested in the Schneider Trophy this year.

If that is the mental attitude of the committee and the members of the Royal Aero Club one begins to understand why the Sport of Aviation in this country is in such a sad way. One would have imagined that in any representative sporting club which had already two shares in a great international trophy the greatest excitement would have been caused by a rumour that at the very last moment a challenge had been sent in which entirely upset the previous situation and practically killed our own chance of ever winning that trophy. But apparently the mandarins of the Aero Club were merely not interested. Perhaps in its own good time the Club will deign to announce whether Italy is to compete or not.

British phlegm and British stolidity and the British habit of not getting excited in an emergency have won battles for us, and probably account for the fact that we own the best parts of the habitable earth. But there is all the difference in the World between those qualities and an attitude of mind which is not sufficiently interested to bestir itself when anything of moment occurs outside this country.

That attitude of mind is similar to the stupidity which l us the motor trade of the World because we were not su ciently interested to notice that the Americans were turni out good cheap cars fully equipped while we were trying plant on overseas markets just whatever we found it most c venient to make. And it is allied to the kind of mind whic content to make any kind of aeroplane or engine that Air Ministry experts want, thus avoiding the mental ef required to produce something new and fresh and startl and also avoiding taking what ought to be an ordinary c mercial risk by striking out on a new line.

Happily new men with new ideas are steadily recaptur the motor trade overseas. And a few people with pluck energy and initiative have come out with new aeroplanes new engines which have forced, or will force, the Air Minis experts to accept their progressive ideas. Which points the fact that new men with energy and initiative and id are badly needed in the Royal Aero Club.

There is a proverb to the effect that the time finds man. Evidently the need of British Aviation is not yet s ciently great for the arrival of the man. But at any rate have had more than sufficient proof that so far as the R Aero Club is concerned it has not got the man who can part to the Club the energy which it needs if it is to do duty by British Aviation.—C. G. G.

THE KING'S CUP RACE.

The date of the King's Cup Race this year has been tentatively fixed for July 9 and 10 next. The course will be approximately 2,000 miles and will consist of a series of out and home flights to certain provincial towns. The starting and finishing place of these flights will be the London Aerodrome, Hendon, subject to the permssion of the Air Council, as that Aerodrome has now been taken over by the Royal Air Force.

THE TWO-SEATER LIGHT AEROPLANE COMPETITION, 1926.

A meeting of the Joint Committee of the Royal Aero Club was held on Thursday, Apr. 8, 1926, when there were present:—*Royal Aero Club Representatives.*—Air Vice-Marshal Sir Sefton Brancker, K.C.B., in the Chair, Lieut.-Col. M. O. Darby, Lieut.-Col. W. A. Bristow, Capt. W. Dancy. *Air Ministry Representatives.*—Air Commodore F. C. Halahan C.M.G., C.B.E., D.S.O., M.V.O., Major J. S. Buchanan. *S.B.A.C. Representatives.*—T. O. M. Sopwith, C.B.E., C. R. Fairey. In attendance.—H. E. Perrin, Secretary, R.Ae.C., and J. Brown, Assistant Secretary, S.B.A.C.

The final regulations were approved.

The following alterations in the Regulations already issued were made. *The Eliminating Tests.*—(Getting Off): The distance from the starting point to the barrier is increased to 300 yards. *The Eliminating Tests.*—(Pulling Up): The length of run is increased to 125 yards.

Change of Pilots.—Change of Pilots is permitted but such change must be notified beforehand to adjust the weight.

The Date and Place of the Competition.—The Competition will be held at Lympne Aerodrome, near Hythe, commencing Friday, Sept. 10, 1926.

The Eliminating Tests will be held on Sept. 10 and 11, 1926, and the competition proper from Sept. 12-17, 1926.

The Courses.—The course of approximately 2,000 miles will include turning points at Brighton, Eastbourne, Hastings, Dover, Ramsgate, Margate, Herne Bay and Croydon.

The Full Regulations will be issued next week.

THE GROSVENOR CHALLENGE CUP HANDICAP.

The Race for the Grosvenor Challenge Cup will be held at Lympne Aerodrome on Saturday, September 18, 1926 (the concluding day of the Light Aeroplane Competition). The Race will be over a distance of approximately 100 miles.

The Aeroplane and Engine must have been entirely constructed in the British Empire. The weight of the engine must not exceed 275 lbs. The Entrant and the Pilot must be British Subjects. The Entrant must be an individual and not a Company. Entry Fee £2.

THE WILBUR WRIGHT MEMORIAL LECTURE.

The fourteenth Wilbur Wright Memorial Lecture before the Royal Aeronautical Society will be read on May 27 by Mr. F. W. Lanchester. The title of the lecture has yet to be announced. Mr. Lanchester many years ago laid the foundations of the theory of aerofoils, which, received with marked coolness in this country, was developed largely in Germany during the war and is now universally accepted as a very great step towards the development of a sound working theory of aerodynamics, and as a very powerful tool in the hands of both the scientist and the aeronautical engineer, and this mark of recognition is to be welcomed as an honour—somewhat long deferred—to a prophet in his own country.

A FLYING GOVERNOR-GENERAL.

On Apr. 7 Lord Stonehaven, Governor-General of Austra flew as passenger in the Wackett Widgeon flying boat h.p. Puma engine) at Sydney. The Widgeon was designe Sq. Ldr. Wackett, D.F.C., A.F.C., B.Sc., A.F.R.Ae R.A.A.F., and constructed at the R.A.A.F. Experime Station at Randwick. The more recent tests of this fl boat have been very satisfactory.

SIMPLE ARITHMETIC.

A curious error in transcription appeared in The Ai plane last week. Discussing the enormous growth of Aviation in the United States one quoted Mr. Lester Gardn statement that 300 owners of civil aircraft, whether pri individuals or firms, had compiled between them a tota 6,000,000 hours flown. One added, on one's own acco that this might be put down as pretty nearly 100,000 ho flying. To this one appended the remark "which is appr mately an average of 3,000 hours per operating firm or dividual, in the year."

A little simple arithmetic will show that if 300 firms individuals fly for 100,000 hours they will fly, on an aver 333⅓ hours apiece, and not 3,000 as printed.

The next paragraph stated that the Berkshire Avia Tours had carried 32,000 passengers during 1925 and the total hours of flying for the six Avros or thereab which the firm has had in operation must have amounte about 3,000. A critical reader of The Aeroplane, ha pointed out the mistake in arithmetic, justifiably rejoices the Berkshire firm should do approximately 3,000 hours' ing during the year as against a mere 300 hours' average each of the American firms.

Fortunately one made the remark at the time that it safe to assume that none of the American operators c possibly operate more efficiently than does Mr. Fred Hol of the Berkshire Company. But in spite of that one would like to convey the impression that an English firm car 3,000 hours' flying in the year against 300 by an Ameri

In the first place, although the American civilian mach may be fairly slow, they probably do more than sixty m an hour, and so the probability is that the 6,000,000 n flown in the States represents nearer 80,000 hours' flying 100,000. Also there is a possibility that the Berks machines flew for less than 3,000 hours in all, because n of the 32,000 passengers were carried two at a time and s of the trips may have lasted for only a few minutes. Also Berkshire total is the total for six machines whereas American average must be made up very largely by si machines rather than by groups of five or six machines

Consequently the actual hours flown by each of Mr. Hol machines may not be very much higher than the actual h flown by some of the more efficient American machines.

The real point is that the Berkshire Company's mach by carrying 32,000 passengers in the year, have shown much genuine keenness there is for flying in this count it is given a chance. But Mr. Holmes is one of per half-a-dozen firms or individuals in all who make a li out of passenger carrying and air-taxi work in this cou whereas in America, as Mr. Gardner has shown, there something like 1,700 different owners and operators of craft.

The population of the United States is roughly double population of Great Britain. But the United States can port 1,700 civilian firms or individual aviators whereas G Britain can only support perhaps half-a-dozen. And wants to know why?—C. G. G.


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THE ROYAL AIR FORCE.

The London Gazette.

Apr. 6.

General Duties Branch.—E. C. Foreman is granted a S.S. comn. as a Plt. Off. on probation, with effect from and with seniority of, Mar. 13.

The following Plt. Offs. are promoted to the rank of Flg. Offs. :—H. W. Raeburn (Sept. 3, 1925); H. B. Barrett (Feb. 8).

Flt. Lt. C. M. Laing, M.C., A.F.C., is restored to full-pay from half-pay (Mar. 20), Flg. Off. R. G. Mollard is transferred to the Reserve, Class A (Apr. 4).

Stores Branch.—Plt. Off. on probation F. W. Felgate is confirmed in rank (Feb. 10).

Reserve of Air Force Officers.—Flt. Lt. H. B. Pett, M.C., resigns his comn. on appointment to a comn. in the Auxiliary Air Force (Apr. 6); the comm of Plt. Off., on probation, D. Abbott is terminated on cessation of duty (Mar. 17).

Auxiliary Air Force.—General Duties Branch.—The following to be Flt. Lt. :—No. 601 (County of London) Bombing Squadron.—H. B. Pett, M.C. (Apr. 6).

Medical Branch.—The following to be Flg. Off. :—No. 600 (City of London) Bombing Squadron.—N. P. Henderson (Apr. 6).

Appointments.

Week ending Apr. 12.

General Duties Branch.—Squadron Leaders C. N. Lowe, M.C., D.F.C., to No. 1 Sqdn., Iraq, 1/4. J. F. Gordon, D.F.C., to No. 31 Sqdn., India, 1/4. F. Fowler, D.S.C., A.F.C., to Aircraft Depot, Iraq, 26/3. J. M. Robb, D.F.C, to No. 3 Sqdn., Upavon, 15/4.

Flight Lieutenants J. M. J. C. J. I. Rock de Bescombes, to No. 5 F.T.S., Sealand, 6/4. J. Bussey, to No. 7 Group H.Q., Andover, 1/4. R. D. Starley, M.C., to School of T.T. (Men), Manston, 6/4. T. S. Horry, D.F.C., to No. 5 Arm. Car Coy., Iraq, instead of to Aircraft Depot as previously notified, 12/2. B. Ankers, D.C.M., to School of Photography, S. Farnborough, 5/4. T. Humble, to School of Photography, S. Farnborough, 6/4.

Flying Officers R. J. Montgomery-Moore, to School of Photography, S. Farnborough, 5/4. J. B. Barrett, to No. 4 Sqdn., S. Farnborough, 13/4. H. J Brown, to Aeroplane and Arm. Exper. Estab., Martlesham Heath, 15/4. N. C Ogilvie Forbes, to School of Naval Co-operation, Lee-on-Solent, 6/4. T. B. Fenwick, to No. 12 Sqdn., Andover, 6/4. F. N. Hawker, to No. 5 F.T.S., Sealand, 6/4. H. F. Jenkins, to C.F.S., Upavon, 6/4. C. G. C. Woledge, to No. 45 Sqdn., Iraq, 22/2. H. E. Rew, to No. 208 Sqdn., Egypt, 19/3. J. A. Elliott, to No. 2 Sqdn., Manston, 15/4. R. B. Jordan, to No. 28 Sqdn., India, instead of to No. 31 Sqdn. as previously notified, 12/2. G. I. C. Peacocke, to No. 60 Sqdn., India, 10/3. A. H. D. Livock, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 17/2. A. F. Hutton, to No. 31 Sqdn., India, 10/3. G. W. R. Russell, to Aircraft Depot, India, instead of to No. 20 Sqdn. as previously notified, 12/2. J. C. Marcy, to No. 31 Sqdn., India., 10/3. D. Robinson. to No. 5 Sqdn., India, 10/3. C. Feather, to No. 31 Sqdn., India, 10/3. H. S. Marton, to No. 27 Sqdn., India, 10/3.

Pilot Officers J. McGuinness, to No. 55 Sqdn., Iraq, 26/3. P. B. Chubb, to No. 30 Sqdn., Iraq, 22/2. E. G. D. Stewart, M.C., to No. 70 Sqdn., Iraq, 22/2. P. W. Knox, to No. 8 Sqdn., Iraq, instead of to No. 30 Sqdn. as previously notified, 12/2. G. H. C. Keay, to remain at No. 2 F.T.S., Digby, instead of to No. 5 F.T.S. as previously notified. R. G M. Hill, to No 6 Sqdn., Iraq, 1/4. J. S. Blomfield, J. C. McE. Gibb and L. T. Pankhurst, to Aircraft Depot, India, 1/4.

Stores Branch.—Flying Officers C. J. Polden, to R.A.F. Depot, Egypt, 16/3. P. H. Burt, to Supply Services (Central Supply Depot), Iraq, 21/3.

Accountant Branch.—Squadron Leader E. W. Gregory, M.C., to H.Q., Inland Area, 12/4. Flying Officers A. C. Lobley, to Record Office, Ruislip, 17/4. D. J. Sherlock, to Aircraft Depot, Iraq, 1/4. C. F. Goatcher, to No. 4 Stores Depot, Ruislip, 14/4. Pilot Officer J. P. Cave, to No. 17 Sqdn., Hawkinge, 7/4.

Fatal Accidents.

The Air Ministry regrets to announce that, as the result of a collision in the air at Henlow, Bedfordshire, on April 10 between a Vickers-Vimy machine and an Avro machine, both of the Inland Area Aircraft Depôt, Henlow, Flg. Off. Charles Victor Lacey, A.F.C., and William Scott, the pilots of the respective machines, and No. 330689 L-AC. Reginald Richard Germain, No. 361781 L-AC. Basil Henry Young, and No. 328869 AC. (First Class) James William Simmonds, who formed the crew of the Vickers-Vimy machine, were killed.

The first officer of the Vickers-Vimy mahine was Charl Victor Lacey."

The Secretary of State for Air (Sir Samuel Hoare) has ceived the following telegram from the King :—

I am shocked and grieved to hear of the tragic accide at Henlow Aerodrome, resulting in the loss of five valua lives to the Royal Air Force. Will you kindly convey to t bereaved families, as well as to all ranks at Henlow, the pression of my deepest sympathy.—George R.I.

The following reply was sent by Sir Samuel Hoare to Lo Stamfordham, the King's Secretary :—

The Air Council and the Royal Air Force are extrem grateful for His Majesty's sympathetic message, which am at once conveying to Henlow and to the relatives the officers and men who lost their lives.—Samuel Hoa Secretary of State for Air.

At the inquest the coroner very sensibly congratulated Depôt on not having had a fatal accident for five years, a pointed out that this accident did not produce a high aver for the period.

The Air Ministry regrets to announce that as a result an accident at Arawali, India, to a D.H.9a of No. 60 Sq on Apr. 4, Plt. Off. David John Lloyd, R.A.F., the pilot the aircraft, and Lieut. Walter John Vezey, R.E., a passen in the machine, were killed.

The R.A.F. Cairo—Cape Town Flight.

The R.A.F. Expedition under Wing Cdr. C. W. H. Pulfo O.B.E., A.F.C., which left Cairo on Mar. 1, to fly to the C and back, arrived at Bloemfontein on April 9 and at Beauf West on Apr. 11.

The Expedition arrived at Cape Town on Apr. 12 landed at the Wynberg aerodrome shortly after 1 p.m.

The Officer Commanding the Flight, Wing Cdr. Pulfo was welcomed by the Mayor of Cape Town, who said t he hoped that this would be the first of many such flights

The R.A.F. Memorial Fund.

The Report of the administration of the R.A.F. Memo Fund for the period from Jan. 1 to Mar. 31, 1926, shows a t of 215 cases dealt with in the office of the Fund, exclus of ex-officers. The list of grants made amounts £1,808 9s. 2d. and are shown under the usual headings.

Grants made to the post-war R.A.F. amount of £629 5s. and include two large loans.

Association Football.

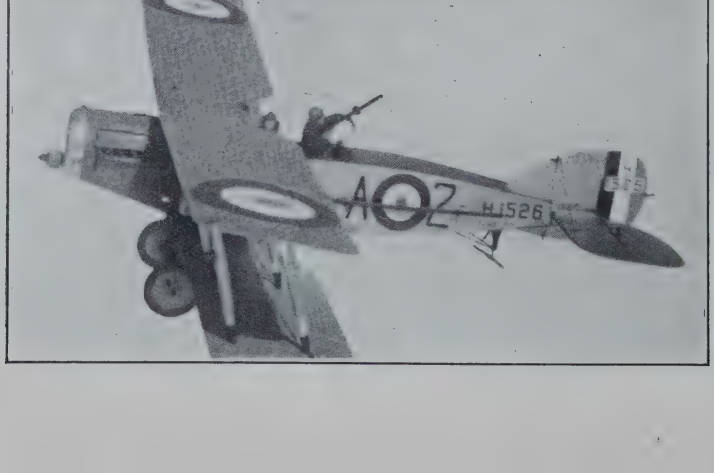
R.A.F. v. Army:—The R.A.F. beat the Army at Uxbri on Apr. 10, by 4 goals to 3. The Air Force victory was result of their vigorous and sustained attacking powers the good combination between the half-backs and the forwa This combination was particularly good on the left wi

The first goal for the R.A.F. was scored by AC. R after some good passing. The Army were pressing, h ever, and soon equalised from a corner kick after a g save by AC. Moran. AC. Smith, who played a notice good game, paved the way for the next goal, which scored by AC. Morris, a very fast wing-man. The A scored again before half-time with a very high shot.

The Army looked like winners early in the second but Flt. Sjt. Fretwell defended magnificently. AC. Mo scored again for the Air Force with a splendid shot a a clever dribble by AC. Smith. AC. Morris scored again a a vigorous R.A.F. attack.

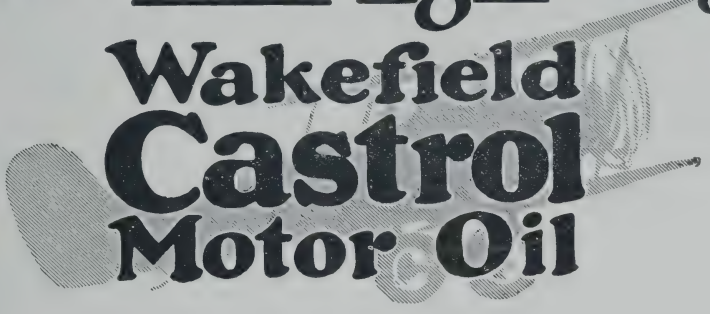
The Army caught the R.A.F. off their guard shortly af wards when Lieut. Hegan kicked an easy one while Moran was out chasing a long kick from Cpl. Cooper.

An amusing interlude during the game was the unsucc ful efforts of the R.A.F. Medical Service to ply its un



ARMY CO-OPERATION.—A Bri Fighter of No. 4 (Army Co-operat Squadron, R.A.F., South Farnboro No. 4 Squadron was formed in Dec ber, 1912, at Farnborough, under M G. H. Raleigh, of the Essex Regt. Walter Raleigh, in "The War in Air," says :—"After completing establishment it moved to Nethera where it carried on practice in re naissance, artillery co-operation, cr country flying, night flying, and all business of an active unit. No Squadron flew to France as part of original Expeditionary Force in Aug 1914, one Flight remaining at Dove carry out patrol duties. The Squad was reduced to a cadre in Febru 1919, and reformed in April, 1920.

25,074 Miles in 226 Hours with a Sealed Engine—*using*



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Need we point the moral ?

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trade. Twice it approached what appeared to be a likely victim but without success. The third time seemed lucky for the R.A.F. M.S. The victim lay prone on whatever is the equivalent of the touch-line in Soccer. The R.A.F. M.S. summoned an ambulance. The victim gave one look at the ambulance, scrambled to his feet and rushed back into the battle. One suggests that the R.A.F. M.S. should invite the co-operation of the Fleet Air Arm and rig up a breeches-buoy from the Stadium to the Hospital. This would obviate the delay in fetching the ambulance and make things brighter for the R.A.F. M.S.—C. M. MCA.

The teams were :—

THE ARMY.—Lieut. H. Murray (The Cameronians), goal; Sjt. F. Twine (2nd Batt. Royal Welsh Fusiliers) and Guardsman C. Pope (1st Batt. Scots Guards), backs: Cpl. A. Cartlidge (Depot Batt. R.E.), Pte. W. C. Wilde (5th Batt. R. Tank Corps), and Pte. A. Bentham (2nd Batt. Leicestershire Regt.), half-backs; Cpl. A. Cooper (R.E.), Trumpeter F. Evans (17/21 Lancers), Cpl. A. Fitzgerald (2nd Batt. Rifle Brigade), Lieut. T. M. R. Briggs (R.A.S.C.), and Lieut. K. E. Hegan (R.A.S.C.), forwards.

ROYAL AIR FORCE.—AC. W. Moran (Inland Area Aircraft Depot, Henlow), goal; AC. Bangey (Cranwell) and F-S. S. Fretwell (17th Fighting Sqdn., Hawkinge), backs; Cpl. J. Aitken (Cranwell), Flg. Off. H. B. Williams (Cranwell), and AC. E. C. Underhill (Staff College, Andover), half-backs; AC. R. Blyth (School of T.T., Manston), AC. A. Bishop (Inland Area Aircraft Depot, Henlow), AC. H. Kirk (7th Bombing Sqdn., Bircham Newton), AC. L. Smith (Martlesham Heath), and AC. S. Morris (Halton), forwards.

Boxing.

The Army and Air Force Boxing Match between the champion teams of the two Services, 2nd Batt. The Loyal Regt. and the R.A.F., Manston, will take place at Manston on Apr. 22. Sir Philip Sassoon, the Under-Secretary of State for Air, has presented a Challenge Cup for annual competition in this contest.

The teams for this year will be :—

2ND BATT THE LOYAL REGT.—*Officers:* (Heavy), Lt. W. Schoales, M.M. (Middle), Lt. H. S. Thomas. (Welter), Lt. J. W. E. R. Gainher.

Other Ranks: (Heavy), Pte. Barber. (Cruiser), Lce.-Sjt. Coo (Middle), Pte. Dykes. (Welters), Pte. Taylor, Pte. Harrison. (Light Cpl. Mitchell, Pte. Gadley, Pte. Kelly (Feather), Pte. O'Fe (Bantam), Sjt. Haslam.

MANSTON.—*Officers:* (Heavy), Flg. Off. P. G. Chichester. (Middle Flg. Off. Cannon. (Welter), Flg. Off. F. Larman.

Airmen: (Heavy), AC. Steel. (Cruiser), AC. Monkley. (Middle L-AC. House. (Welters), AC. Page, AC. Meyrick. (Light), AC Garratt, AC. MacIlwaine, AC. MacLaughlin. (Feather), AC. Botele (Bantam), AC. Calicott.

Service Contemporaries.

Two new R.A.F. Station Magazines have appeared durin the last few months. *The Basrah R.A.F. Magazine* and *Th Depôt Magazine, Aboukir.*

The Basrah magazine is published quarterly. The currer number is well illustrated with photographs of Basrah an interesting places in the neighbourhood and some cleve drawings of a humorous kind. There is plenty of spor news and the usual mildly libellous local news paragraphs.

The Aboukir magazine will be known in future as *Th Overseas Airman.* This seems rather a comprehensive tit for a magazine published at Aboukir considering that Airme also serve overseas in India, Iraq, Malta and Palestine, as we as all over the world as members of the Fleet Air Arm.

In a foreward in the first number Group Captain Bowhil C.M.G., D.S.O., Senior Air Force Officer, Alexandria Distric says :—"I have much pleasure in metaphorically breakin the tapes and so launching the good ship *R.A.F. Depôt Mag zine.* In wishing her *bon voyage* I trust that the spirit whic prevailed during the time she was on the stocks will safe carry her through her trials and stamp her well found."

With the exception of seven pages of sports the entire issu is humorous, which seems rather a pity as it is difficult t keep a funny paper funny enough to appeal to everybod The Editors would be wise to keep a few pages for th serious-minded in future numbers.—C. M. MCA.

ADOLPH DE BAHR.

It is with great regret that one records the death of Commander Adolph de Bahr, Swedish Royal Navy, Naval Attaché to the Swedish Legation and Aide de Camp to His Royal Highness the Crown Prince of Sweden.

Many of those concerned with the British Aircraft Industry knew Commander de Bahr and owe him much for his unfailing courtesy and personal kindness. When the Gothenburg Exhibition was being organised Commander de Bahr took the greatest personal interest in making easier the work of the British aircraft firms who were exhibiting there. And he showed plainly how keen he was that British aircraft, of which he knew so much, should be worthily represented in his country.

At Gothenburg he was foremost in showing attention and hospitality to the British visitors and made many friends in this country who deeply regret that he is no longer with us.

Commander de Bahr was only forty years of age and has been a member of the Swedish Naval Staff since 1914. He leaves a widow and five children, to whom his many friends in England extend their deepest sympathy in their loss.

A funeral service was held to his memory at the Swedish Church, Marylebone, on Friday last, and a number of those concerned with British aeronautics were present. Among them were representatives of the Air Ministry and of the Royal Air Force and of the Society of British Aircraft Constructors.

CLAUDE JOHNSON.

Everybody associated with motor engineering will have learnt with great regret of the death of Mr. Claude Johnson, Managing Director of Rolls-Royce Ltd., who died in London on Apr. 11 of pneumonia after a short illness, in the sixty-second year of his age.

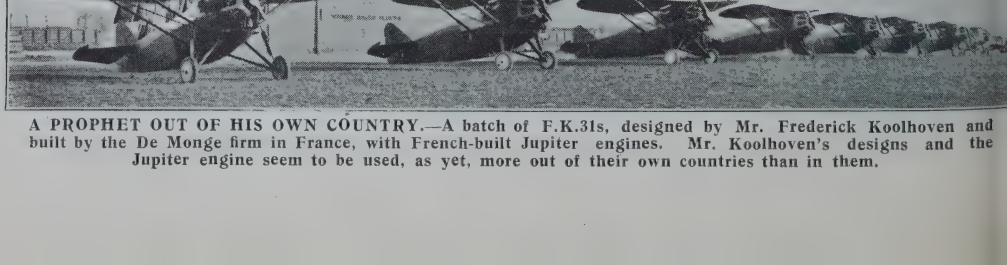
Claude Johnson was educated at St. Paul's School and the Art School, South Kensington. He associated himself with motoring in its earliest days and was the first Secretary of the Automobile Club, long before it was honoured by being made a Royal Club.

When the late the Honourable Charles Rolls, in conjun tion with Mr. Royce, produced the Rolls-Royce car and d veloped it to the stage of being a commercial propositi Mr. Claude Johnson left the Royal Automobile Club and too charge of the commercial side of Rolls-Royce Ltd. In th capacity that outstanding ability which had enabled him make the Automobile Club one of the most influential organ sations of its kind in the World was brought to bear in s curing for the Rolls-Royce car the most influential clientèle.

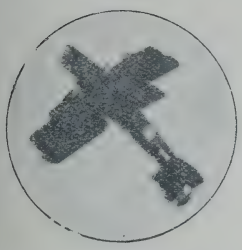
In quite a short time all the best people drove in Roll Royces. And Mr. Johnson's particular gifts coupled with t sound engineering ability of Mr. Royce and the imaginati of Charles Rolls had the result that to-day the name of Roll Royce is synonymous all over the World with ultima achievement in combined luxury and genuine high quali of material and workmanship.

When early in the War there came a pressing need f aero-engines Claude Johnson had the foresight to see th the high standard of workmanship in the Rolls-Royce Wor and the technical knowledge of the firm's design staff cou best serve this country in the production of engines for a craft. Mr. Royce and the firm's technicians applied the selves with good will to the task. And in a surprisingly sh space of time Rolls-Royce Ltd. produced a series of engin in the Rolls-Royce Hawk, Falcon and Eagle classes whi even to-day hold their own against the World's best po war products. In all the rush and hurry of war-time ma production every aero-engine which came out of the wor at Derby attained fully to the highest standard of Rol Royce reputation.

Since the War Mr. Johnson's commercial policy has fu justified itself. The new Rolls-Royce cars and the Rol Royce Condor engine have actually enhanced the firm's re tation where so many other firms have lost caste in the eff to make money or to save themselves from extinctio Claude Johnson's creed was that the name Rolls-Royce sho always stand for the best of everything, and one knows t those who are left to carry on his work will do it in a w of which he would approve.—C. G. G.

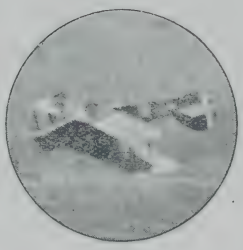


A PROPHET OUT OF HIS OWN COUNTRY.—A batch of F.K.31s, designed by Mr. Frederick Koolhoven and built by the De Monge firm in France, with French-built Jupiter engines. Mr. Koolhoven's designs and the Jupiter engine seem to be used, as yet, more out of their own countries than in them.



Looping photographs by courtesy of "Flight."

THE Boulton & Paul Bugle with Napier Lion Engines. Entirely of Metal Construction.





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PROGRESS IN AUSTRALIA.

The following remarkable summary of operations has been received from the Queensland and Northern Territory Aerial Services Ltd. It shows the finest examples of real commercial Aviation yet made public :—

Dry weather conditions have continued during the month with the result that the usual wet weather Summer taxi trips have not been called for. Passengers on the route have, however, come forward well, and the Service continues its popularity with travellers.

Figures for the month were as follows :—Route passengers, single stages, 92; Taxi passengers, 6; Freights (lbs.), 462; Miles flown for month, 8,318; Total Company miles flown, all without injuries to personnel or passengers, 330,441.

THE AERIAL MAILS.

An illustration of the urgent way in which the air mails are frequently used occurred early in the month, when a squatter drove 35 miles into Longreach in order to put an urgent letter on the 'plane for Cloncurry. The 'plane was only caught by a bare half-minute to spare, and the letter was delivered in Cloncurry, 311 miles away, only four hours later.

Passengers while travelling, especially if they are old air travellers, pass away their time in reading or writing, and in instances writing letters for conveyance by air mail. The following typed letter was recently received from a passenger who evidently had a pleasant journey between Longreach and Charleville :—

" It is pleasant to be up in the bright blue sky at six o'clock in the morning. ' D.H.9c No. 86 ' is steadily climbing. The earth is sinking away. How pretty are the station residences scattered hickledy-pickledy over the landscape. The magnificence of it all is bewildering.

" And here I am sitting with a fellow-passenger in the comfortable and commodious cabin of the latest 'plane on the Western Air Route. My friend is amused at my industry. He says he has never heard of anybody typing letters in an aeroplane before. Perhaps not, but then the modern machine is so steady that working a Corona typewriter is quite a simple matter.

" Letters written en route and posted on the 'plane would catch the Charleville mail to Brisbane to-day. My friend in the City of Hills would read my Corona-typed impressions of this wonderful trip sometime to-morrow."

[NOTE.—Mr. H. V. Roe did a great deal of type-writing in the Avro Limousine during the Military Trials on Salisbury Plain in 1912.—ED.]

LONGREACH TO ADELAIDE AND TWO DAYS SAVED.

On Monday, Feb. 15, the Longreach-Charleville mail 'plane carried its full complement of four passengers and a second machine was despatched carrying an extra three passengers to Charleville.

Two of the passengers on the " aerial limited " were desirous of reaching Adelaide in as short a time as possible owing to the serious illness of a member of their family in that city. The air trip to Charleville saved these travellers 24 hours in travel time, enabling them to reach Sydney on Wednesday morning instead of Thursday morning. At 8 a.m. on Thursday morning the mail 'plane for Adelaide was caught at Cootamundra the former city being reached on the same afternoon, which meant the saving of a further 24 hours.

This is perhaps the first instance of two regular Australian Air Mail Services being used for the furtherance of an urgent journey.

DROUGHT CONDITIONS—SEEKING RELIEF COUNTRY.

North-Western Queensland is at present in the grip of one of the worst dry times that has been experienced for many years. Rainfall at Longreach for the last 11 months has only totalled 375 points.

Cattle and sheep are dying in large numbers either for the want of water or grass. In areas where the stock routes are too dry to get stock away many sheep are being hand fed at tremendous expense, and in districts where conditions are not so bad that stock cannot be moved the search for *agistment or relief country is very keen and competition often comes into the picture.

On the 26th instant a prominent Western Queensland owner was in Cloncurry and hearing of suitable agistment country in the Normanton district flew from Cloncurry to Normanton as the best way of finalising the deal immediately and of making the most complete inspection of the country possible, namely by air.

This is one of the most interesting trips yet carried out by " Qantas " and was such as may be of great value to the squatter who carried out the trip.

During the journey from Cloncurry to Normanton deviations were made to ascertain the actual stock route conditions the presence of waterholes and grass being verified along the route. The blocks of country over which an option was required were then flown over and inspected from the air. After arrival at Normanton a further inspection was undertaken by car thus completing the information required and allowing the business to be completed.

*[NOTE.—Agistment means the care and maintenance of live stock for hire,—*e.g.* the letting of grazing, water, stabling, fencing or any such service.—ED.]

U.S. NAVAL CATAPULT EXPERIMENTS.

A Loening Amphibian aeroplane was launched successfully from a ship of the U.S. Navy at sea by means of a catapulting device during the early part of March. This new form of catapult projects the machine on the carriage by means of a high-explosive gunpowder charge.

The launching of aircraft by catapult was first attempted in the U.S. Navy in 1912 when a hydro-aeroplane, with Lieut. Ellyson, U.S.N., piloting, was launched after two unsuccessful attempts. Further experiments were made on the *U.S. Mississippi* in 1914 when catapulting was made part of the course. In 1916 catapults were installed on *U.S.S. Seattle* and *U.S.S. Huntington*, with elevated tracks, and R.6 seaplanes were launched at sea.

At this stage the cars went overboard with the machine and were rescued in a more or less damaged condition. The problem of the catapult brake was solved in 1920. Later the Naval Aircraft factory was called upon to design a turntable catapult. This was successfully tested in 1921.

Towards the end of 1921 the gunpowder catapult was suggested by Lieut.-Cmdr. Hamlet of the U.S. Coast Guard and was developed by the Bureau of Ordnance.

A MEDITERRANEAN INCIDENT.

On Apr. 10 an Italian service flying boat carrying as passengers Generals Cavallero and Bonzani, the Italian Secretaries of War and Air respectively, was forced to alight in mid-Mediterranean while flying from Italy to Tripoli.

The passengers were taken off by a merchant ship and conveyed to Malta, where they were accommodated on H.M.S. *Queen Elizabeth* until the Italian warship *Tigre* arrived.

H.M.S. *Viscount* searched for and found the flying boat, took off the crew and towed the aircraft to the Calafrana station. After repairs, it was able to proceed.



AUSTRALIA ADVANCES.—One of the D.H.50 of the Quantas Air Line, with passengers and baggage.

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SEVEN YEARS AGO	Rolls-Royce Aero Engines in a Handley-Page Aeroplane flew from ENGLAND to INDIA (Karachi), (5,556 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew the NORTH ATLANTIC (1,890 miles non-stop).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to AUSTRALIA (11,500 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to SOUTH AFRICA (6,281 miles).
FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

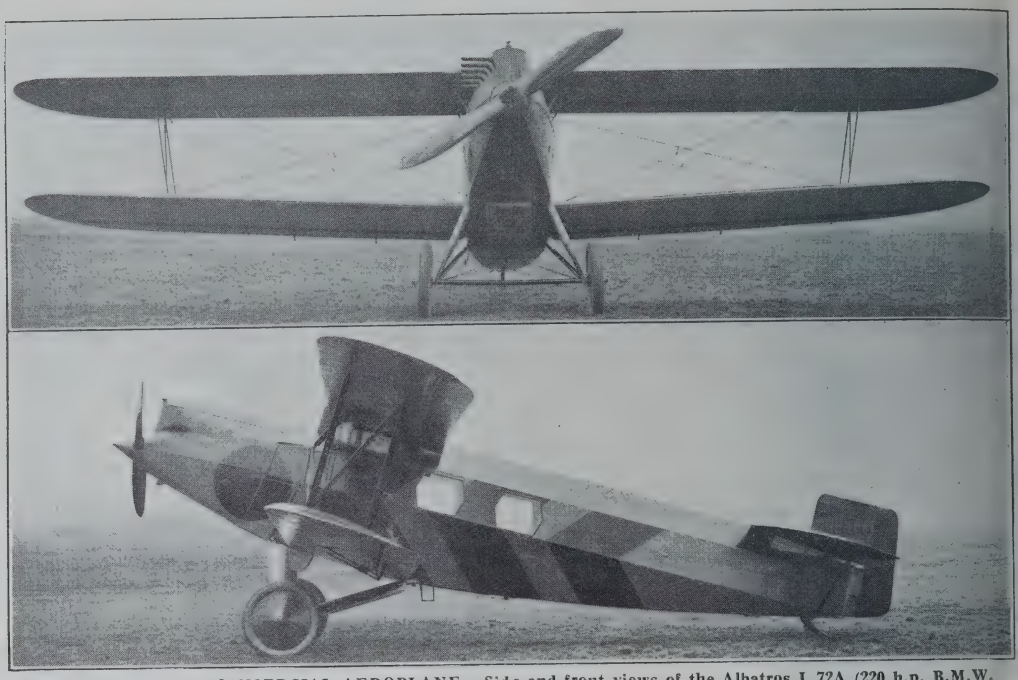
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C.P.

THE FIRST SLOTTED WING COMMERCIAL AEROPLANE.



A SLOTTED WING COMMERCIAL AEROPLANE.—Side and front views of the Albatros L.72A (220 h.p. B.M.W. engine) recently delivered to a prominent German publishing firm for the transport of newspapers.

There has just been completed and tested the first aeroplane fitted with combined slotted and flapped wings and built to a definite order to fulfil a certain commercial purpose.

This machine is the Albatros L.72A. which has been built to the order of the Verlag Ullstein of Berlin, proprietors of the famous *B.Z. am Mittag*, and will be used for the rapid transport of newspapers.

It is a biplane of more or less conventional design fitted with the 220 h.p. B.M.W. engine.

The wings consist of one top centre section and right and left top and bottom planes.

They are of all-metal construction built up of two duralumin box spars and a series of steel tubular ribs, the whole structure being fabric-covered.

The centre section is of thicker section than the rest of the wings.

About two-thirds of the span of the leading edge of each top and bottom planes carries a duralumin profile which is hinged along the leading edges. The entire trailing edges the planes are equipped with slotted flaps. The outer s tions of these flaps operate as ailerons, but the inner sectio that is, those opposite the leading edge slots, act as fl and are operated b ya control in the pilot's cockpit. T front and rear flaps, the latter of which have a maxim drop of 24°, are operated together by means of torsional tu and cranks.

The slots are of the type developed independently and sim taneously in Germany and England by Dr. Lachmann a Mr. Handley Page, who are now working in alliance.

One set of N-type interplane struts is fitted on either s of the fuselage and the whole wing cellule is braced streamline wires.

The fuselage, of a flattened octagonal shape, is built up welded steel tubes, wire braced, and is covered with fab

The engine is carried on a steel tube mounting which c be rapidly removed by the undoing of four bolts and a f



THE ALBATROS L.72A.—In these views the Albatros L.72A is seen, on the right, on the ground with slots opened and flaps depressed, and, on the left, taking-off with slots opened. The difference in landing speed with slots opened and closed is some 22 m.p.h.

THE MODERN TRAINING AEROPLANE



THE DE HAVILLAND
"MOTH"

(Engine - 27-60 H.P. "CIRRUS.")

The De Havilland "MOTH" has been designed entirely in the light of modern experience, and fulfils in every respect modern training requirements. Its controls are light, effective and straightforward at all speeds. It is fitted with a 4-cylinder air-cooled engine, which is as reliable as that of an automobile. Its fuel and oil consumptions for school work are less than four gallons and one pint per hour respectively.

For convenience and easy transport it can be folded, and it is so light that it can be handled on the ground by one man.

Both aircraft and engine are so simple to maintain that an owner pilot can keep a "MOTH" in flying order without skilled assistance.

Every standard "MOTH" is supplied with a British Air Ministry Aerobatic Certificate of Airworthiness.

The "MOTH" is used by

LONDON AEROPLANE CLUB,
LANCASHIRE AERO CLUB,
THE MIDLAND AERO CLUB,
NEWCASTLE-UPON-TYNE AERO CLUB,
YORKSHIRE AERO CLUB,
SYDNEY (Australia) AERO CLUB,
MELBOURNE (Australia) AERO CLUB,
DE HAVILLAND SCHOOL OF FLYING, EDGWARE,
and by many
PRIVATE OWNER BEGINNERS.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
STAG LANE AERODROME,
EDGWARE, MIDDLESEX.

Telephone—Colindale 6160. Telegrams—"Havilland, Edgware."

bracing wires. The engine is completely cowled in, the lines of cowling being carried right forward into an airscrew spinner. The radiator is of the Lamblin type.

Immediately behind the engine is situated the pilot's cockpit and below the wings is the cabin.

The cabin as fitted to this particular machine accommodates two folding seats and an apparatus for dropping bundles of newspapers in flight. The rest of the space will be occupied by newspapers.

The dropping gear consists of two perpendicular shoots. Each shoot contains 16 flaps, each capable of sustaining a parcel of newspapers weighing 10 kgs. (22 lbs.). By means of a release gear operated from the pilot's cockpit, the various parcels can be dropped at will, a recording disc in the cockpit indicating when and how many parcels have been dropped.

By elimination of the dropping gear the machine can be rigged as a four-seater limousine biplane.

The tail unit consists of tail plane and elevator, a rudder and a centrally-pivoted fin. At each movement of the lateral control the fin turns around the vertical axis, thus obtaining through a smaller movement of the control stick a control of greater efficiency. This device has been thoroughly tested out in the wind tunnel of the Gottingen Experime Establishment and has shown very satisfactory results.

Two releasable petrol tanks, having a capacity for hours, are fitted.

The undercarriage is of the normal Vee type and sus sion is of the oleo-pneumatic type

SPECIFICATION.

Span	12.8 m.	Power loading	9.1 kgs./
Length	10.5 m.	Performance :—	
Height	3.75 m.	Max. speed	180 km.
Wing area	36 m.²	Cruising speed	170 km.
Weight empty	1,300 kgs.	Landing speed, with sl	
Useful load	700 kgs.	open	75 km.
Total weight	2,000 kgs.	Landing speed, with sl	
Wing loading		shut	110 km.
	55 kgs./m.²	Ceiling	3,500

The Verlag Ullstein has purchased three aircraft, tw the above-described Albatros L.72A. and one Heinkel H. (250 h.p. B.M.W. engine), and on Apr. 8 these three mach opened the newspaper-carrying service for the *B.Z. am Mi*

TWO AMERICAN HIGH-PERFORMANCE TWO-SEATERS.



THE CURTISS FALCON (O.-1).—A three-quarter front view of the 1925 Curtiss Falcon fitted with the 400 h.p. Curtiss D.12 engine.

In 1924 the U.S. Army Air Service organised a competition for two-seater reconnaissance aircraft with the object of finding a replacement for the D.H.4B (Liberty engine) that has been the standard two-seater in the Army Air Service since 1918 and corresponds to our D.H.9a and Bristol Fighter combined.

As a result of this competition the Douglas O.2 and the Curtiss O.1 Falcon were adjudged the winners and orders for these aircraft were issued.

These machines are so arranged as to be equipped with either the 400 h.p. Liberty engine or the 500 h.p. Packard 1-A-1,500 engine.

THE CURTISS FALCON (O.1).

The Curtiss Falcon was originally designed in 1924 and was arranged to be fitted with either the Liberty or Packard engine in accordance with the regulations of the Army Air Service competition.

Structurally the machine differs from usual Curtiss practice. The wings are of wood construction with duralumin fittings and fabric covering. In addition to a pronounced stagger the top plane has a sweepback of 9 degrees allowing for excellent vision and at the same time provides stability necessary for accurate gunnery.

The fuselage is of duralumin tubing, using a Warren truss with rivetted joints. This type of construction has given entire satisfaction and works out much lighter than steel or wood.

The undercarriage is of the usual Curtiss split type, using rubber compression disc suspension housed inside the fuselage.

The tail unit and ailerons are of duralumin construction, fabric covered. Ailerons and elevators are differentially controlled, providing excellent control at all speeds with minimum control stick loads. The rudder is balanced and the tail plane is adjustable in flight.

Fuel is carried in a droppable tank within the fuselage and an auxiliary tank, also droppable, can be installed under the fuselage for long-distance flying.

The 1925 Falcon is fitted solely with the Curtiss D.12 engine and the following performance concerns the D.12 Falcon :—

Weight empty (with water)	2,388 lbs.	Useful load	1,748 lbs.
		Crew (2)	360 lbs.
Fuel and oil	756 lbs.	Landing speed	63 m
Equipment	632 lbs.	Rate of climb	1,235 ft. per
Weight loaded	4,136 lbs.	Service ceiling	18,7
Performance :—		Absolute ceiling	20,3
High speed	153 m.p.h.	Climb in 10 mins.	9.4
Speed at 15,000 ft.	136 m.p.h.		

The following data concerns the Curtiss Falcon fitted the 500 h.p. Packard engine and has been taken fro Lampert Report :—

Official Performance Tests on Curtiss X.O.1.

Summary of tests :—

Pilot	Lieut. Macready.	Equipment (K.3 camera, complete etc.)	37
Engine	Packard 1-A-1500	Crew	36
Rated power	510 h.p. at 2,080 r.p.m.	Fuel and oil	62
Airscrew	Standard steel.	Weight loaded	3,87
Airscrew dia.	9 ft. 8 ins.	Wing area (incl. ailer	3
Pitch	15.5 degs. at 48 in. radius.	Wing loading	11.01 lbs./
Weights :—		Power loading	7.56 lbs
Empty with water	2,277 lbs.	Ground r.p.m.	
Armament (one 30 cal. fixed gun, two flexible Lewis guns, bomb-racks, etc.)	218 lbs.		

PERFORMANCE CONVERTED TO STANDARD ATMOSPH

Density.	Temp.	Stand Altitude.	Climbing Speed. m.p.h.	r.p.m.	Climb. Min.	Rate.	Level S m.p.h.
1.036	5C	0	93.6	1,800	0	1,725	154.1
.887	- 3	5,000	96.3	1,800	3.2	1,380	151.4
.842	- 4	6,500	97.1	1,800	4.3	1,275	150.4
.744	- 6	10,000	98.8	1,795	7.4	1,032	147.4
.634	- 15	15,000	100.9	1,785	13.2	685	141.4
.536	- 24	20,000	101.8	1,770	23.4	337	131.6
.475	- 29	23,400	102.0	1,750	38.8	100	118.5
—	—	24,800	absolute ceiling.		—	—	102.1

Landing Speed ... Approxima ely 62-63 m.p.h.
Endurance ... Full throttle : ½-hour at sea level and 3 hours at 1

THE DOUGLAS O.2.

The Douglas X.O.2 was designed by the Douglas Co., of nta Monica, Cal., in 1924 to participate in the Army com-etition for observation aircraft. Seventy-five machines of this pe were ordered in 1925 to replace the D.H.4B in various quadrons of the U.S. Army Air Service.

In general arrangement the machine follows the lines of the mous "World Cruiser," the principal modifications being the design of the nose which now includes the tunnel diator and very much cleaner cowling lines and a simpli-ed form of undercarriage consisting of two oleo legs and vo Vees hinged at the centre line of the underside of the selage and carrying one large diameter wheel at each ex-emity. Fuselage construction is of welded steel tube fabric vered.

The petrol tanks are carried in the bottom plane wing roots nd are droppable in emergency.

The machine can be equipped with either the 400 h.p. iberty or the 500 h.p. Packard engine.

The following summary of performances of the O.2 type is ken from the Lampert Report :—

Date of test ... Jan. 12, 1925
Pilot Mr. Lockwood.
Engine ... Packard 1-A-1500
Rated power
500 at 2,065 r.p.m.
Airscrew dia. 9 ft. 8 in.
Weights :—
Empty with water 2,580 lbs.
Armament 218 lbs.
Equipment 377 lbs.
Crew 380 lbs.
Fuel 636 lbs.
Oil 82 lbs.
Weight loaded 4,253 lbs.
Wing area (incl. ailerons) 370 sq. ft.
Wing loading 11.5 lbs./sq. ft.
Power loading ...8.5 lbs./h.p.
Ground r.p.m. 1,750.

PERFORMANCE CONVERTED TO STANDARD ATMOSPHERE.

Density.	Temp.	Stand Altitude.	Climbing Speed.				Level Speed.	
			Speed.	r.p.m.	Time.	Rate.	m.p.h.	r.p.m.
1.000	15C	0	87.4	1,800	0	1.270	150.0	2,065
.863	4.5	5,000	90.0	1,800	4 45	992	144.5	2,040
.824	1.5	6,500	91.0	1,800	6.0	910	142.8	2,035
.737	- 4.5	10,000	92.5	1,800	10.33	720	138.0	2,005
.624	- 12.0	15,000	95.2	1,795	19.12	442	129.0	1,945
.502	- 20.0	21,200	98.7	1,770	44 3	100	110.0	1,825
.468	—	23,100	100.0	1,755	—	—	100.0	1,755

In connection with these two performances it is interesting to note that the load factors required for U.S. Army Air Service Observation Aircraft are as follows :—

Wings at maximum lift, 8.5; wings, top load, 3.5; horizontal tail, 30 lbs./sq. ft.; vertical tail, 25 lbs./sq. ft.; fuselage, 6.



NEW EQUIPMENT.—The Douglas O.2 (400 h.p. Liberty engine), which has been ordered in quantity by the U.S. Army Air Service to replace the D.H.4B, the standard two-seater reconnaissance aeroplane in the Army Air Service since 1918.

AMERICAN AIR-COOLED ENGINES.

A correspondent in the United States who has intimate nowledge of aeronautical progress in that country writes as llows :—

"The old Wright crowd of designers have gone with the ratt and Whitney Company, one of our largest machine tool ncerns, and they are building a radial around 250 h.p. but rather consistent design.

"The cylinder of nearly all our air-cooled engines over re is the result of work done at McCook Field by the group experimenters including Mr. Heron who used to be with e Bristol Company. A large part of the success of this linder has been due to metallurgical advantages. Metal-rgical developments of rather an important nature in alloys, c., have made it possible for a remarkable cylinder to be veloped.

"The next development of importance, I think, is the right Company cylinders of the Lawrance design. To ac-mplish this end, when their engineering staff left to go ith the Pratt and Whitney Company, they took over the cCook designers, Heron, Jones, Morehouse, etc., and have rried on the work further to the point of an engine with closed push-rods and valve-mechanism and considerably tter cooling and horse power per cubic inch.

"This is a very distinct step in advance. And although not veloped like the Jupiter, I think it has the promise of carry-g things a step further after the development stages are ne through.

"Another engine of promise is being built by Mr. Warren oble, an engine designer of very long experience and ability. is engine is in the class of radical developments, and his linder is not a copy of McCook experiments. The principal ature of the Noble engine is that all valves are operated by l instead of push-rods. This also aids their cooling. Log tests by the Navy have shown astonishing performance and it looks as though a new type had been started by this designer.

"All of these engines are in fairly small horse power—around 200.

"Following the great success of the air-cooled inverted engine, the Curtiss company, I understand, is developing their pursuit engine in inverted form and with air-cooled cylinders. Owing to the very small head resistance, I believe it has the greatest future of any, and it is easier to cool than a radial.

"It looks as if we could expect great things from air-cooled war-type engines.

"The Rickenbacher small engine is coming along slowly, the main problem being finance.

"The Packard Company is also developing an air-cooling system for their engines.

"So that, altogether, I do not know of a single engine project going on in the States at the present time that is not air-cooled

"I think you understand that the limitation of our aviation experimenting in this country to date has been the Curtiss OX.5 engine and the Liberty engine. Our experimenters could choose from either 90 h.p. or 400 h.p. there was nothing between. Now that new engines are coming in various sizes, you will see a new plane springing up and aviation in this country will start to grow."

WANTED—A LIGHT AEROPLANE.

Does anybody know of the existence in this country of a second-hand light aeroplane which is for sale? The prospective buyer wants something in the power-class of the Moth or the Austin Whippet, not in the low-power two-cylinder class. Offers should be sent in the first place to the Editor of THE AEROPLANE, 175, Piccadilly.

THE VICKERS-WIBAULT SINGLE-SEAT FIGHTER.

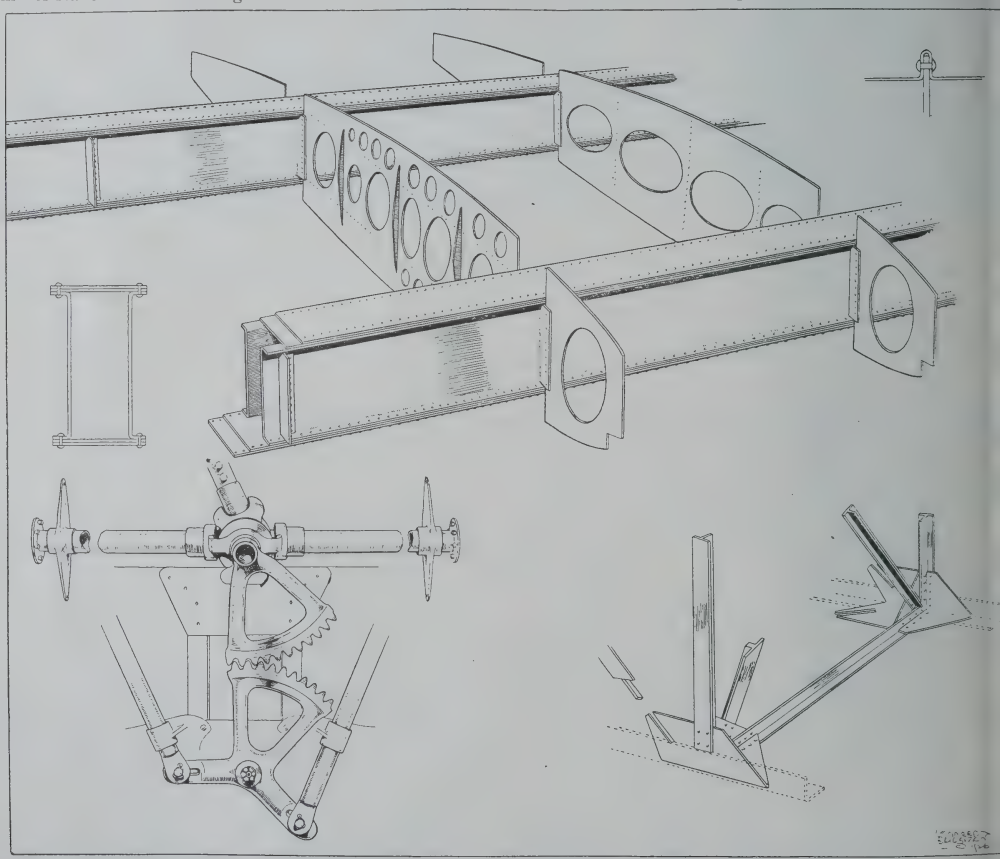


A FIGHTING MONOPLANE.—The All-Metal Wibault, an English version of which is being built in quantity by Vickers Ltd. at Weybridge.

Vickers Ltd. have under construction at their Byfleet works a number of single-seat fighters for the Chilean Government built to the designs of M. Michel Wibault. These machines are of the type known as the 7C.I. and are particularly interesting on account of their very simple and straightforward all-metal structure.

The machine itself is a high-wing braced monoplane fitted with a Jupiter engine—which in the British-built version is to be of the latest but unmentionable series. The wing used is of very thick section, parallel in chord, but tapering appreciably in thickness from the point of the strut attachments to both tip and centre line, the spar depth varying in such a manner as to give an approach to a beam of uniform resistance for the loading carried.

The wing structure is perhaps the most interesting feat of the Wibault construction. Both spars are simple sections. The side members are flanged top and bott the top and bottom members are plain strips rivetted these flanges, and are of doubled thickness throughout. intervals vertical angle strips are rivetted to the side m bers, and the ribs—which are in three separate pieces— rivetted to these angles. The ribs project above the nor profile, and covering sheets which have flanged-up ed are rivetted through these edges and the ribs. The ribs not extend to the leading edge which is made from a for strip of duralumin and rivetted to the skin covering. D struts of duralumin tube are carried from specially brackets rivetted to the spars.



WIBAULT DETAILS.—Top, general scheme of wing structure of the Wibault, with, on the left, a section of the spars, and in the right corner the method of fixing the covering to the ribs.
Bottom left, the arrangement of the control lever, showing the gear and push-rods for the ailerons. Right, the fuselage construction, of angle and tee section duralumin.

The wing is built in two sections, joined on the centre ne. The joint on the rear spar is a simple hinged joint, it that on the front spar consists of two heavy bolts pass- g through hinge-like fittings one at the top and one at e bottom of the spar. The complete structure has been und to be extremely rigid in torsion, and although designed comply with French requirements of strength, it is said satisfy our own Airworthiness Department in their some- hat different requirements.

The fuselage structure—like the wings—is metal-covered, it is not exclusively dependent on the skin for any stress, there is a completely braced structure within the skin. here are four longerons of angle-section duralumin, fitted ith vertical and horizontal struts, and diagonal bracings. hese latter members are generally of T section bar, and e joints are of a simple fish-plate type. At the attachment undercarriage and wing bracing struts, the T section cross embers are replaced by substantial channel-section mem- rs.

The undercarriage—entirely of steel—is of the axle-less pe incorporating a Vickers oleo-pneumatic shock-absorber. he main wing bracing struts are attached to the fuselage substantial steel fittings which also take the undercar- age struts.

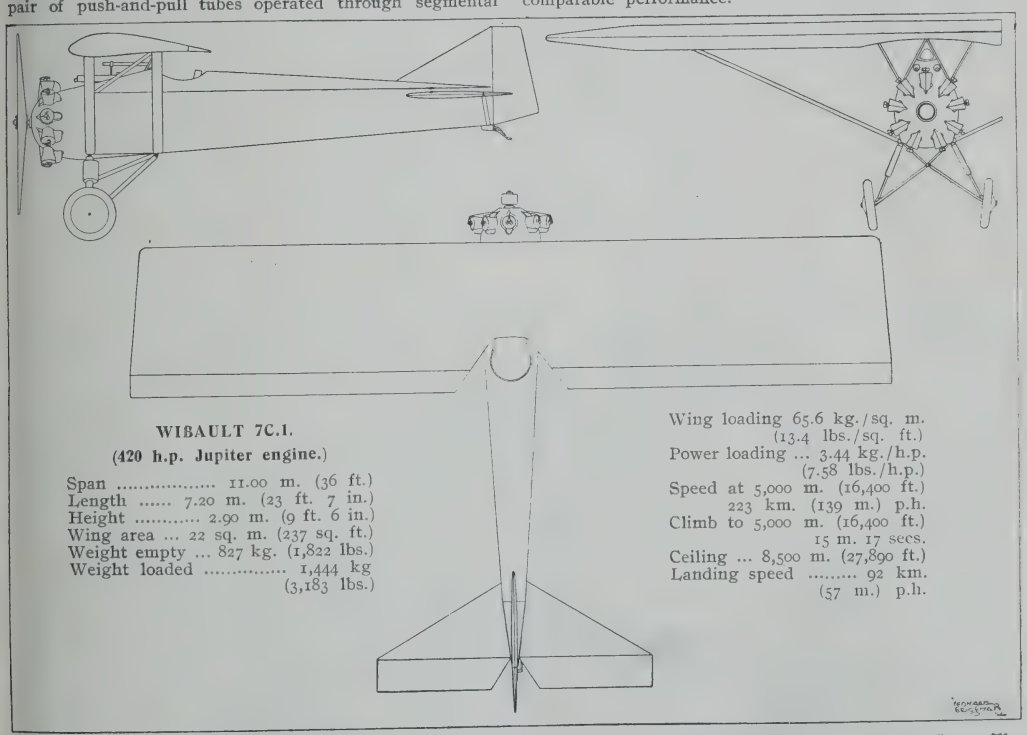
The tail plane is of triangular plan form, and has but one ar which is parallel to the leading edge. The elevators e built on a through-going tubular front, carried in very bstantial hinges from the tail plane, and this tube acts in fect as the rear spar of the tail plane. The tail is braced two tubes on the under side, which support the outer d of the tail-plane front spar and the elevator front spar their point of convergence. The tail plane is adjustable flight, the adjustment being secured by raising or lower- g the front spar round the elevator hinges.

The control arrangements are very neat but somewhat mplex. The ailerons extend over practically the whole an, are of very narrow chord, and are operated entirely om the inner end of the tubular front spar upon which they e built. The connection to the control stick is made by pair of push-and-pull tubes operated through segmental gears, which run straight up from the pilot's cockpit, behind a pair of inclined wing struts, to a lever on the inner end of each aileron. Elevator and rudder controls are connected by straight cables to levers on a lay shaft in the end of the fuselage From one of these levers one push-and-pull tube runs to a central elevator lever in the fuselage. From the other a similar rod runs to a lever on the starboard side of the rudder.

The Jupiter engine is carried on a back plate carried from four substantial pin joints on the front of the body by a pyramid built of duralumin angles and plates, and the whole mounting is removable with the engine. Petrol and oil tanks are of duralumin, entirely devoid of welded joints, which are apparently perfectly free from leak troubles and are certainly extremely light. The joints in these tanks are made between up-turned flanges of individual sheets. One of each pair of flanges is made twice as deep as the other and is turned over round the first flange, and the seam is then rivetted through. Some form of plastic petrol-resisting compound is spread over the facing flanges prior to rivetting.

A feature of the Wibault is the very great care which has been taken in the design of the controls. The flying controls have already been mentioned, and a sketch of the aileron gear gives an idea of the substantial and somewhat expensive nature of their details. This is more or less typical of the whole control gear, including those for the engine. It is not unusual to find such details in French aircraft to be of a somewhat sketchy nature—but in this example a very large amount of care has been taken to ensure that all the details shall be robust, and that unnecessary friction and lost motion shall be avoided.

The Vickers pilots are agreed that this machine has a very remarkable performance, and is quite pleasant to fly. The get-off is extraordinarily good, and the climb and general performance at altitude equally so. Moreover, despite a wing loading approaching 14 lbs./sq. ft., the machine can be flown under control at speeds considerably lower than those which can be attained on any recent British fighter of comparable performance.



WIBAULT 7C.1.

(420 h.p. Jupiter engine.)

Span	11.00 m. (36 ft.)
Length	7.20 m. (23 ft. 7 in.)
Height	2.90 m. (9 ft. 6 in.)
Wing area	22 sq. m. (237 sq. ft.)
Weight empty	827 kg. (1,822 lbs.)
Weight loaded	1,444 kg (3,183 lbs.)
Wing loading	65.6 kg./sq. m. (13.4 lbs./sq. ft.)
Power loading	3.44 kg./h.p. (7.58 lbs./h.p.)
Speed at 5,000 m. (16,400 ft.)	223 km. (139 m.) p.h.
Climb to 5,000 m. (16,400 ft.)	15 m. 17 secs.
Ceiling	8,500 m. (27,890 ft.)
Landing speed	92 km. (57 m.) p.h.

BIG U.S. NAVAL ORDERS.

An order has been placed by the U.S. Navy with the ackard Motor Car Co. for 15 engines. These engines are of 00 h.p. and are for use in the various aircraft carried by the ircraft carriers *Lexington* and *Saratoga*. Two Packard 00 h.p. engines have already been installed in the Boeing .B.1 flying boat.

In addition to the engine contract the U.S. Navy has rdered 35 fighting aeroplanes for the *Lexington* and *Saratoga* from the Curtiss Aeroplane and Motor Co. These machines will be fitted with Curtiss D.12 engines.

The total amount of the contracts already awarded for aeroplanes and engines is $6,500,000, providing for the following equipment :—27 Boeing Patrol 'planes, 35 Curtiss fighting 'planes, 10 Loening amphibians, 24 Martin scouting and torpedo 'planes, 20 P.T.1 training 'planes (Consolidated Airplane Co.), 75 500 h.p. Packard (1-A-1500) engines, 150 800 h.p. Packard (2-A-2500) engines, 36 600 h.p. Wright Tornado engines.

33,000 MILES BY SEAPLANE.

Owing to the unfortunate illness of the Marchese de Pinedo the lecture describing his flight to Australia, Japan and back had to be read in the author's absence. The duty of reading was discharged by Mr. Handley Page.

In the opening passages of the paper, the author comments on the present preponderance of land machines for civil transport purposes. This preponderance is due to the impression that the land machine is largely superior to the seaplane in useful load capacity, and to the fact that the lines so far exploited are mainly over land. He points out, however, the disadvantages of the land machine in its requirements in regard to ground organisation, namely the difficulty of providing terminal aerodromes near the centres of population, the high cost of providing and maintaining these terminals, and the intermediate landing grounds necessary for reasonable safety.

He expresses the opinion that these difficulties—particularly for inter-Continental communication, where they are most serious—may be overcome by the use of seaplanes. Even confining attention to Europe it can be seen that nearly all the important commercial and political centres are either on the coast or on the banks of large waterways and that the routes connecting these centres lie mostly in the vicinity of watercourses or lakes, and that at all such waterside centres harbour arrangements already exist which will suffice for the use of the seaplane. These have been produced at vast cost during the ages for the use of water transport services. If the land machine is to be used to link these centres by air, an entirely new organisation of landing places must be built up at a cost which can only be met by spreading it over a long period.

To the objection that the seaplane if used in this way may be forced to land, and therefore must either be amphibious or dangerous, the Marchese replies—and all acquainted with the seaplane will agree—that the wheeled aeroplane is more dangerous than the seaplane in a forced landing on the ground, and that the only disadvantage under which the seaplane labours is that of possible inability to take off again after landing unless it is first removed to a suitable waterway.

To demonstrate the soundness of these ideas, the flight now in question was planned to be of great length and to cover a great diversity of climate and geographical position. The total distance—33,000 miles—was about 7,000 miles more than that of any previous flight, and covered the range from 10° E. to 155° E. and from 45° N. to 40° S. About 24,000 miles was flown along the coast or in sight of land, about 5,000 miles over the open sea, and about 4,000 miles over land.

The most difficult problem to be solved in organising the flight was that of the points to be used to pick up supplies. The requirements for these supply points were (1) they must be not further apart than the maximum range (800 miles) of the machine, they must possess a sheltered stretch of water sufficient for taking off and landing, they should possess regular communications with the outside world so that supplies could be forwarded to them without chartering a special steamer, and where possible should be able locally to provid normal supplies.

This problem of supply bases was studied by the authc during a period of one month in the light of informatio drawn entirely from the Italian Navy Hydrographic Office so that actually all the information used for this purpos was based on information drawn from marine experience c navigation in the districts covered.

Particularly full information as to the probable weathe conditions to be encountered were available from such source On the southern and eastern coasts of Asia there are westerl monsoons from May to September, easterly monsoons fro October to March, with calm periods in April and Octobe In Australia from June to September the winds circulat round the coast in an anti-clockwise direction. Very ba weather and heavy rains are to be expected on the east coas of the Gulf of Bengal during May, and from June to Octobe heavy rains are to be expected among the Moluccas, th Philippines and Formosa, while typhoons are frequent an violent in the zone between the Philippines and Japan i August and September.

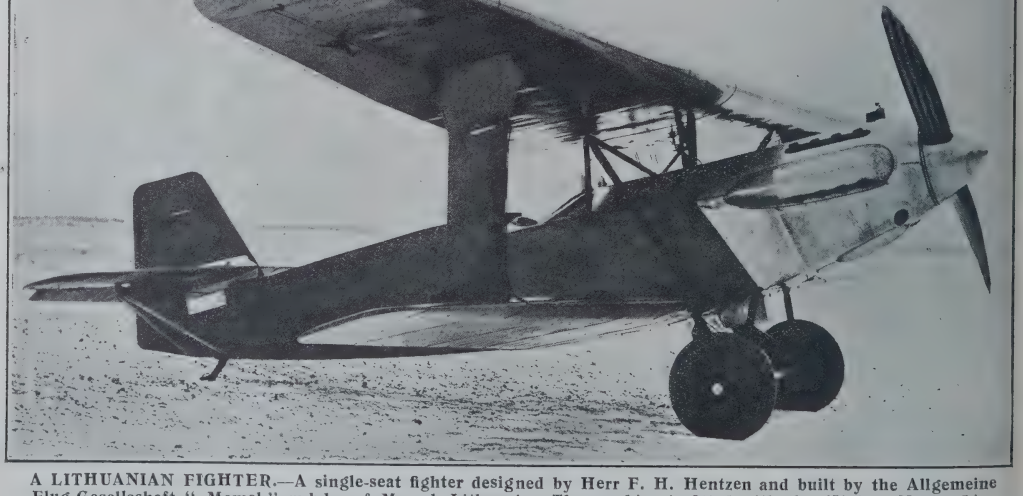
The start of the flight was therefore fixed for not later tha the first week in April, which it was hoped would permit c reaching Melbourne at the end of May, passing Burma befor the bad weather period. A stay of one month at Melbourn to overhaul the engine would then permit of reaching Japa in July, when the weather if not good ought at least to b possible. These arrangements, however, broke down, partl owing to a late start. Burma was reached in the very wors month and the machine was very nearly lost there, and th typhoon zone was passed in the end of August and th beginning of September—the most critical period. Th Marchese remarks that he could not have succeeded better i meeting the worst possible weather in Burma and th Philippines had he tried to do so, but that having gon through the experience he feels pleased to have done so an to have shown that there is no such thing as weather in whic the aeroplane cannot fly.

The course from Melbourne to Tokio was entirely new s far as aircraft was concerned. And in the author's opinion n land machine of the capacity of his own seaplane could hav flown over that course unless a very costly and well-planne system of landing grounds were provided for the purpose.

The seaplane (a Savoia 16 bis) used—fitted with a 300 h.r Fiat—was a standard service machine of the Italian Royal Ai Force. For the purpose of this flight it was fitted with a 45 h.p. Lorraine-Dietrich engine. Two of these engines wer supplied for this flight by the Lorraine-Dietrich firm. On was installed in the machine and went with it to Tokio, th other was despatched to Tokio and there replaced the original

The machine was fitted with dual control in order that th pilot might be relieved by the mechanic when his whole atten tion was required for navigational or other purposes.

A set of sails designed by the author was made and carrie on the journey, so that in the event of engine breakdown o



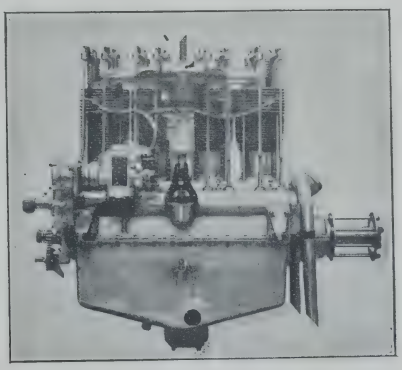
A LITHUANIAN FIGHTER.—A single-seat fighter designed by Herr F. H. Hentzen and built by the Allgemeine Flug-Gesellschaft "Memel" m.b.h., of Memel, Lithuania. The machine is fitted with the 450 h.p. Napier Lion engine and in preliminary tests showed a speed of 160 m.p.h. and a climb to 17,000 feet in 17 mins.

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We have received a letter from the Chief Instructor of the Newcastle-upon-Tyne Aero Club, Major L. A. Packman, referring to the reliability of the three A.D.C. "Cirrus" engines in use by the Club, which letter we reproduce below :



Cramlington Aerodrome,
Cramlington, Northumberland,
12th March, 1926.

A.D.C. Aircraft, Ltd.,
Regent House, Kingsway,
London, W.C.2.

Dear Sirs,

Having run three of your 27/60 h.p. "Cirrus" engines for an aggregate of four hundred and fifteen (415) hours without a single involuntary stoppage I feel it is incumbent upon me to acquaint you of the fact.

Engine reliability is of course at all times of the utmost importance but its value is especially enhanced when used in a training machine, where confidence in one's engine is of inestimable value to a pupil.

Your achievement in producing a Light Aeroplane Engine of such outstanding merit is, I consider, worthy of the highest praise.

Yours sincerely,

L. A. PACKMAN, Major (Retired),
Instructor to the Newcastle-upon-Tyne Aero Club.

A.D.C. AIRCRAFT LIMITED,
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89, KINGSWAY, LONDON, W.C.2.

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a steamer track the machine could be navigated to more frequented neighbourhoods in reasonable weather.

Only a small supply of food was carried for emergencies, and reliance was placed upon catching fish or shooting birds in the event of that being necessary. The problem of water supply was solved by carrying a still and condenser weighing three pounds and worked from a Primus burner. This would produce a liqueur glass full of drinking water in five minutes. Wireless was not carried, because it was felt to be very doubtful whether it would permit of communication with the ground stations available and the weight of the gear would have been considerable.

The start from Seste Calende actually took place on Apr. 20. A day or two was spent at Brindisi attending to a few minor details, and leaving there on the 23rd Baghdad was reached on the 25th. The strong current in the river at Baghdad made getting off difficult, and the high temperature at Charbar, in the Indian Ocean, also led to trouble in starting. At this place the port wing float was damaged by rough seas, and owing to lack of facilities repairs to this and to the oil tank imposed a stay of five days. From Bombay an overland flight to Coconada—about 720 miles—called for full petrol tanks, etc., and the take-off was difficult. The westerly monsoon, which should have helped, failed to do so as the result of a disturbance in the Gulf of Bengal and consequently a landing was made at Rayamundry, at the mouth of Godavery. There being no aviation spirit available, car spirit was used to proceed to Coconada. The flight was along the course of the Godavery, but as the river was practically dried up it would have been useless for landing or taking off.

At Akyab difficulty was found in filling up owing to bad weather. At Rangoon a short stay was made, and one valve —slightly bent—was changed. From Rangoon to Puket tremendous storms and heavy rains were encountered. From Puket things improved and a smooth passage was made to Batavia. A day was spent here overhauling engine and machine. Thence one stage to Kupang, in the isle of Timor, and a second to Broome. From Broome to Melbourne no trouble was encountered, and the Marchese states that except for the south coast—fringed by desert and devoid of harbours or habitations—the Australian coast is excellent for seaplane transport, as the weather is good and harbours frequent.

At Israelite Bay—"a particularly difficult airport"—the seaplane was beached at high tide to facilitate fuelling up, but the next tide failed to reach the same height and the crew aided by the four inhabitants had to work through the night to get it afloat again.

Melbourne was reached on June 9—50 days out from Italy. A stay of five weeks was made here, during which the engine was dissembled, overhauled, and replaced at the R.A.A.F. station at Point Cook. The engine after 160 hours' flight was in excellent condition and little was done to it. The machine also was found to require little attention—only the wing tip floats and one slightly bent strut being replaced. Melbourne was left on July 16.

At Sydney, however, the engine was found to be firing very erratically, and on examination a number of cylinders were found to be scored, particularly badly in one block, permitting excess oil to reach the combustion chamber and fouling the spark plugs. Fortunately there were two spare blocks at Melbourne, which were forwarded to Sydney, where one was used to replace the worst damaged block and the other taken aboard as a spare. The departure from Sydney took place on Aug. 6. Apart from a wing tip float damaged in collision with a tug at Brisbane the journey up the east coast of Australia was free from untoward incident, and the same may be said of the trip north as far as Zamboanga, in Manila. This consisted of some four stages of 400 to 500 miles each over open sea and away from regular steamship routes.

At Zamboanga the machine had to land in open sea, and had difficulty in taking off. The sea was rough and the wind strong as typhoons were continuously in the neighbourhood. At Abu, the next stopping place, the seaplane broke from her moorings in a storm, drifted across an oyster bed and under the stem of a steamer—sustaining some damage in the pr cess—fortunately not serious and easily repaired.

In consequence of the extreme heat, the imperfect state the engine, and the generally unfavourable conditions, th take off at Abu was made with a very small reserve of petr for the stage to Manila. The tail end of a typhoon produce a head wind of between 30 and 50 m.p.h. and course had be changed and a landing made at the bay of Atimon in th island of Luzon. Several attempts to take off and get Manila that day were defeated by the weather and led overheating of the engine and pitted valve seatings. Abo three days elapsed before it was possible to proceed to Manil and here it was necessary completely to overhaul the engine which took three weeks.

Manila was left on Sept. 16, and Tokio was reached on Sep 26, *via* Formosa and Shanghai. Typhoons and rain were e countered on this stretch of the journey, the weather remai ing bad as far as Tokio.

Three weeks were spent at Tokio, changing engines accor ing to plan. One lower wing—that which had suffered various collisions—was replaced, but otherwise the machi was in excellent condition.

On Oct. 17 the homeward stage started from Kasumigaur with a flight to Kagoshima. The next day Shanghai w reached after a 750-mile flight across the open sea. The ne stage was Hong-Kong, with an intermediate fill up at Amo Thence the route was Haiphong, Saigon to Bangkok, whe clouds and rain were encountered. At Bangkok repairs to magneto entailed four days' delay. Thence Calcutta w reached on Oct. 28, *via* Rangoon and Akyab.

The return flight across India was made by a more northerl route than that used on the outward journey, which rendere the Ganges and Jumna available for landing as far as Delh From Delhi across desert to Bawalpur—where a refill w obtained—and thence to Karachi was covered in one da landing at Karachi by moonlight.

Bandar Abbas—Bushire and Bushire—Baghdad were covere in one day. Baghdad—Alexandretta on the ne Alexandretta—Leros and Leros—Taranto on the third—3,0 miles in three days. Naples was reached on the followi day (Nov. 6) and the journey ended on Nov. 7 at Rome.

Seste Calende to Melbourne—14,000 miles—took 160 hou flying time and 50 days. Except for three days at Rangoo and one at Batavia the machine was either in the air or o the water continuously, and both hull and wings stood up the extreme temperatures and humidity without any troubl From Melbourne to Tokio—8,000 miles—took 90 hours' flyin which occupied 70 days owing to the various delays. Fro Tokio to Rome—11,500 miles—110 hours' flying time and days were needed.

The Marchese concludes his paper by foreshadowing th advent of large sea-going aircraft capable of linking one plac with its Antipodes within four days and requiring no mo in the way of ground organisation than the building of few piers in small harbours.

After the lecture a large number of lantern slides illustra ing various incidents of the flight were shown. Unfort nately no information was available to identify individu slides and it was in many cases impossible to discover whe individual pictures were taken.

Sir Sefton Brancker in opening the proceedings, and concluding, paid the highest possible tribute to the Marches de Pinedo's flight. He confessed that in this country w had shamefully neglected the seaplane, whereas Italy ha led the world in its post-war development, and it had bee left to the author of this paper to demonstrate the service which the seaplane could render to the British Empire.

[It may here be noted that the arguments advanced by th Marchese de Pinedo as to the advantages of the seaplane f international communication have all been emphasised past years in the pages of The Aeroplane. This paper therefore specially indebted to him for having done so muc to confirm the opinions which it had so long ago expresse Ed.

THE FLYING CLUBS.

REPORTS FOR WEEK ENDING APR. 4.

The London Aeroplane Club.

The total flying during the month of March was 230 flights in 80 hrs. 25 mins. This total is made up as follows:—Dual, 172 flights (64 hrs. 5 mins.). Solo, 29 flights (9 hrs. 50 mins.). Test, 26 flights (4 hrs. 15 mins.). Joy-riding, 3 flights (2 hrs. 15 mins.).

All these flights were carried ont on the one D.H. Moth, G-EBLI.

For the week ending Sunday, Apr. 1, the flying time was 22 hrs. 50 mins.

The following members had dual instruction:—G. Quirk, A. R. Ogston, J. H. Saffery, W. Hay, B. Tucker, R. Thomas, Sir John Rhodes, K. V. Wright, N. J. Hulbert, A. Lees, J. Barros, Miss O'Brien, E. P. Brough, R. L. Hare, R. Malcolm, Mrs. Atkey, G. Wallcousins, T. H. O. Richardson, S. O. Bradshaw, E. D. Moss, F. S. Adams, R. C. Presland, J. S. M. Michie, R. P. Cooper.

The following members flew solo:—Sq. Ldr. M. E. A. Wright, Major K. M. Beaumont, Mrs. Eliott-Lynn.

Major K. M. Beaumont and Sq. Ldr. M. E. A. Wright have been elected to the Committee of the Club.

We have still to raise £100 to complete the purchase of the thir D.H. Moth. Members wishing to subscribe are requested to sen in their names either to Stag Lane or 3, Clifford Street. It is hope to take delivery of the machine on the 20th inst.

Mr. D. Kittell who now owns a D.H. Moth has put up man hours' flying during the Easter week-end. As have Mrs. Eliott-Lyn and Mr. Jones, who own a Moth jointly. Mr. Kittell in landing Swindon on ridge-and-furrow damaged his undercarriage. A loc reporter stated that the undercarriage collapsed in the air and com pelled him to land. The local police wanted at first to hold th machine for investigation by Air Ministry experts.

Members will be plad to know that Capt. F. G. M. Sparks is muc better and will be back to duty very shortly.

The Lancashire Aero Club.

Flying took place on Wednesday, Thursday, Saturday and Sunday The machines in use were G-EBLV and G-EBLR.

Mr. Stack gave dual instruction to W. Calley 1 hr. 10 mins P. Michelson 1 hr. 10 min., F. Gattrell 1 hr., R. Williams 50 mins C. Brown 50 mins., C. Agar 50 mins., D. Tummers 40 mins., A. Menzi





Commandante Franco **Alan Cobham** **Marchese De Pinedo**

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40 mins., A. Macnair 30 mins., A. Barnes 30 mins., S. Crabtree 30 mins., J. Leeming 30 mins., D. Dyson 30 mins., T. Price 10 mins. Total 9 hrs. 50 mins.

Mr Scholes gave instruction to J. Leeming 45 mins., D. Dyson 35 mins., S. Crabtree 25 mins., R. Williams 5 mins. Total 1 hr. 50 mins.

Solo flights were made by B. Smith 2 hrs. 20 mins., M. Lacayo 45 mins., J Leeming 20 mins., R. Williams 20 mins., S. Crabtree 10 mins. Total 3 hrs. 55 mins.

Tests occupied 1 hr. 5 mins.

Total time of machines in the air 16 hrs. 40 mins.

On Thursday Mr. B. Smith made the required flights for his pilot's certificate. He had done just eleven hours' flying from when he first flew to the conclusion of his licence flights.

On Sunday Mr. S. Crabtree made his first solo flight. He appeared perfectly competent in the air and landed excellently.

The Newcastle-upon-Tyne Aero Club.

Total time flown during the week, 16 hrs. 15 mins., made up of: Dual, 14 hrs. (under Major Packman). Solo, "A" Pilots, 1 hr. 45 mins. Passenger, 15 mins. Test, 15 mins.

The following members flew under instruction:—Mrs. Marcks, Miss Leathart, Messrs. Middleton, Whitfield, George, W Todd, J. Bell, C. Thompson, R. N. Thompson (secondary dual), Leech, Irving, Palmer, and Sandilands.

Mr. R. N. Thompson flew with Mrs. Marcks as passenger and Mr. Baxter Ellis took up Mr. and Mrs. H. Ellis and Mr. T. Todd.

Major Packman flew with Mrs. Buscarlet as passenger. One 15 mins. test flight.

It was very unfortunate that on Friday mid-day a mishap should have occurred, putting the only machine in use off service for the remainder of that day and until Saturday evening. Mr. R. N. Thompson, always regarded as the Club's most careful pilot, miscalculated slightly when landing, breaking a wheel and gently turning the machine over onto its back. As is usual in such cases, this took place in the farthest corner of the aerodrome. However, there was a good turn up of members so that there were plenty of willing hands available and the machine was back into the hangar in a very short time.

The only spare required which was not available was a rudder, and Major Packman got onto the telephone right away in an effort to obtain one. The Lancashire Club very kindly offered to supply one from a machine. Owing to holidays it was not safe to trust to having this forwarded by rail, so Mr. J. Edmundson set off for Manchester, accompanied by Major Packman, to bring the rudder up, leaving Cramlington at about 5.0 p.m. and returning at 6.30 a.m. on Saturday.

Meanwhile Mr. Brown had a team at work assisting him to make the necessary replacements, up to a late hour, fitting a new axle, centre-section, cylinder-head, cowling etc. Work was recommenced on Saturday morning, with the result that the machine was being tested by Major Packman before 5.0 p.m. on Saturday. Considering that the machine had to be almost completely dismantled, this was a very good performance.

Straight flying on the Gull had been carried out during the week, and on Sunday Mr. Ellis made a large circuit. Halfway round on a second attempt, he came down with engine trouble. This was speedily rectified, and after a party had lifted the machine over a few hedges into a more suitable field, he flew back to the aerodrome. The familiar "tin" nose of the Gull was converted into a concertina during the operations, and the last part of the flight was made with the nose of the fuselage, about one square foot in area, quite open. No doubt this kept the pilot cool.

The Hampshire Aeroplane Club.

The following detailed information has been received concerning the Hampshire Aeroplane Club:—

Officers of the Club.—President: The Rt. Hon. the Lord Louis Mountbatten, K.C.V.O., R.N. Vice-Presidents: Major-General the Rt. Hon. J. E. B. Seely, C.B., C.M.G., D.S.O., The Rt Hon. the Earl of Birkenhead, P.C., The Rt. Hon. the Lord Montagu of Beaulieu, K.C.I.E., C.S.I., V.D., D.L., The Lord Apsley, D.S.O., M.P., General Sir Alex. Godley, K.C.B., K.C.M.G., Lieut.-Cdr. Sir Warden Chilcott, M.P., J.P., Sir Charles Wakefield, C.B.E., His Worship the Mayor of Portsmouth, His Worship the Mayor of Winchester, Sq.-Cdr. James Bird, O.B.E., late R.N., Rev. E. Bruce Cornford, M.A., Col. E. K. Perkins, C.B.E., M.P., J.P., Mr. Noel van Raalte, Mr. A. V. Roe, O.B.E., Mr. S Saunders, O.B.E.

Committee: O. E. Simmonds (Chairman), A. N. Clifton (Hon. Secretary), R. H. Bound, A. L. Gow, R. V. Perfect, F. Stokes, A. R. Van den Bergh.

The Hampshire Aeroplane Club has applied for the oustanding sixth subsidy which is still un-allotted by the Air Ministry.

The membership is increasing rapidly. Those who wish to take advantage of reduced entrance fees will be well advised to apply soon.

A. V. Roe and Co. Ltd. have agreed to let to the Club their upper aerodrome at Hamble, which has a clear run of 1,100 yards in the direction of the prevailing wind. A large brick building of 31 feet clear span, and capable of housing at least six D.H. Moths, is available, together with suitable club room accommodation.

It is intended at a later date to extend the activities of the Club to include seaplanes. From the point of view of training marine aircraft pilots the merits of Southampton Water are obvious. In view of the fact that no Aeroplane Club in the country caters for this important branch of flying, it is felt that the Club fills a definite rôle in this respect.

Reports for Week ending April 11.

The London Aeroplane Club.

The total flying time during the week ending Sunday, Apr. 11, was 19 hrs. 25 mins.

There is still only one D.H. Moth available, but a second Moth is due for delivery on the 14th inst. and a third one on the 20th inst.

The following members had flying instruction:—G. Quirk, A. R. Ogston, J. H. Saffery, G. Eady, N. J. Hulbert, O. J. Tapper, G. W. Hall, E. S. Brough, H. R. Thomas, K. V. Wright, E. D. Moss, Sir John Rhodes, E. K. Blyth, J. Barros, H. R. Presland, S. O. Bradshaw, F. P. Adams, D. H. P Esler, Miss O'Brien, W. Hay, R. Malcolm, H. Solomon, G. Wallcousins, R. V. Banks, L. Martin, A. Lees.

The following members flew solo:—W. Hay (five flights), Major

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The *ONE* big-end bearing, throughout the 225 hours duration of the test carried the whole of the 450 b.h p. developed. Upon strip examination, allowing for a small amount of wear, the bearing was in the same condition as when fitted.

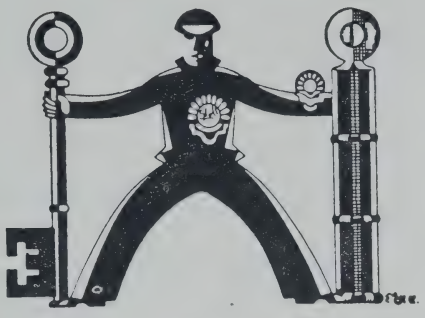
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K. M. Beaumont (three flights), Sq. Ldr. M. E. A. Wright (two flights). The D.H. Moth belonging to D. Kittel, which was slightly damaged when landing at Swindon last week, was quickly repaired and Mr. Kittel was flying again during the week-end.

THE LANCASHIRE AERO CLUB.

Flying conditions have been good this week except on Tuesday and Friday, when high wind prevented flying

Instruction was given by Mr. Stack to Messrs. C. Agar 3 hrs., C. Brown 1 hr. 30 mins., —. Michelson 1 hr. 25 mins., A. Benson 1 hr. 20 mins., Macnair 50 mins., Gerrard 45 mins., Goodyear 45 mins., Hardy 40 mins., Wade 40 mins., —— 35 mins., Smith 30 mins., Jowett 25 mins., Leeming 25 mins., S. Crabtree 25 mins., Magnall 25 mins., Gatterall 20 mins., Slater 20 mins., —— 20 mins., Wilkinson 5 mins.

By Mr. Cantrill to Messrs. Goodyear 1 hr. 15 mins., Tummers 1 hr., Barnes 55 mins., Brown 40 mins., Gatterall 35 mins., Hardy 20 mins., Colley 20 mins., O Groves 15 mins., H. S. Stern 5 mins.

By Mr. Scholes to Messrs. S. Crabtree 35 mins., H. S. Stern 30 mins., Chadwick 30 mins., Gerrard 30 mins., Benson 25 mins.

Solo flights were made by Messrs. S. Crabtree 1 hr. 45 mins., M. Lacayo 1 hr. 35 mins., R. R. Williams 1 hr. 20 mins., Smith 55 mins., Wilkinson 40 mins., Michelson 25 mins.

One Joy-ride of 10 mins. was given and Tests occupied 2 hrs. 15 mins. Total dual, 22 hrs. 50 mins. Total solo, 6 hrs. 40 mins. Tests, 2 hrs. 15 mins. Joy-ride, 10 mins. Total time flown, 31 hrs. 55 mins.

During the week Messrs. S. Crabtree and R. R. Williams did the necessary qualifying tests for their "A" Licences, and on Saturday Mr. P. Michelson made his first solo flight.

All three machines were in use.

THE NEWCASTLE-UPON-TYNE AERO CLUB LTD.

Report for week ending Apr. 11:—The total time spent in the air by members was 26 hrs. 40 mins, made up as follows:—Dual instruction under Major Packman, 18 hrs. 50 mins., Solo, 3 hrs. 20 mins., "A" Pilots, 1 hr. 40 mins., Test, 10 mins., Joy-rides, 2 hrs. 40 mins.

The following members had instruction:—The President of the Club, Col. Sir Joseph Reed, Mrs. Marcks, Miss Leathart, Messrs. Middleton, Gibson, Peacock, Twine, Leech, George, R. N. Thompson (secondary dual), Somerville, McGuiness, Whitfield (Vice-President of the Club).

"A" Pilots, R. N. Thompson, N. S. Todd, the former with Mr. Bell and the latter with Miss Little and Mr. Morrow as passengers.

The soloist was Mr. Leech, who has now completed his tests for R.Ae.C. Certificate.

The passengers who flew with Major Packman were Mr. W. B. Ellis (Vice-President), Mrs. Armstrong, Master Armstrong, Mr. Clay, Mr. Walkinshaw, Mr. Bolam, Miss Bolam, Miss Fox and Mr. Miesagaes.

The members of the Club are very proud of their President and Vice-Presidents, who not only attend the aerodrome regularly, but fly. In the cases of Sir Joseph Reed and Mr. Whitfield, who are taking instruction as well as supporting the Club in other ways, the example is of great value.

The Gull is now a great source of interest to members, apart from Messrs. Ellis, Heppell and Thompson, who own it, and all are surprised at its flying qualities and graceful appearance when in t air. Certain changes in the engine have resulted in a marked i provement in its running and reliability and it now equals the Cirr in this respect. The machine takes-off after a very short run onl climbs beautifully and lands perfectly.

Mr. Ellis and Mr. Heppell have made flights of 10 to 15 minut duration, though now that a slight trouble in the petrol pressu system has been repaired, there is no reason why they should rema up as long as they have petrol. After they had made several fligh each on Saturday, Major Packman took the machine up and flew i 20 minutes. He attempted a height test on Sunday, but was oblig to descend after 15 minutes on account of the severe cold, which soon felt in cold weather on account of the exposed position of t pilot.

THE YORKSHIRE AEROPLANE CLUB.

Report for week ending Apr. 11:—With the advent of warm weath the Club has quite begun to liven up, although our flying is st almost altogether confined to week-end work.

There is a pleasant tension in the air as to who shall break t ice in the first solo. I Hope he does not break the first machine.—E The betting at the moment is evens Mr. Lax, 2—1 Mr. R. Little a Mr. McCalman, and about 10—1 the rest.

However, on Saturday members were surprised to see the machi in the air and the instructor walking in. This occasioned gr searchings of heart until the members learned that it was Mr. Woo an old R.F.C. pilot, who has just requalified with us.

We await with interest the arrival of Mr. Smith's Wren, of whi we gather, he will have delivery in about three weeks' time, when hopes to be able to fly it over from Lytham.

Total flying time, 7 hrs. 15 mins. This includes dual 6 hrs. 5 min tests 30 mins., solo, Mr. Wood, 10 mins., joy-rides 30 mins.

The following members had instruction: Messrs. McCalman, L D. D. Little, T. Little, Wood, Brown, Barnes.

Miss Watson was unfortunately disappointed in her first instructio flight through engine trouble on Sunday evening.

THE PRIVATE AIRCRAFT OWNERS' CLUB.

The inaugural dinner of the "British Private Aircraft Owne Club" was held on Apr. 7 at the Royal Aero Club. Dr. Whitehe Read, the "flying doctor," was in the chair and eleven of the to fourteen private aeroplane owners of Great Britain, who form t membership of the Club, were present or represented, including Ca Hubert Broad, the Schneider Trophy pilot, Sir John Rhodes, a Flt. Lt. Soden. Mr. Stammers deputised for Mrs. Eliott-Lynn and M St. Barbe for Capt. Geoffrey de Havilland, who unfortunately w unable to attend.

The proceedings lasted till 23 hrs. and an interesting discussion to place on private owners and flying. Certain members, having recen sustained minor mishaps to their machines, came in for some go natured chaff, followed by the usual after-dinner humour.

It was decided to hold a meet on Whit Monday, May 24, destination to be disclosed later All members are to turn up in th machines, which will then fly in formation to Stag Lane aerodro the owners afterwards proceeding to town for a Club dinner.

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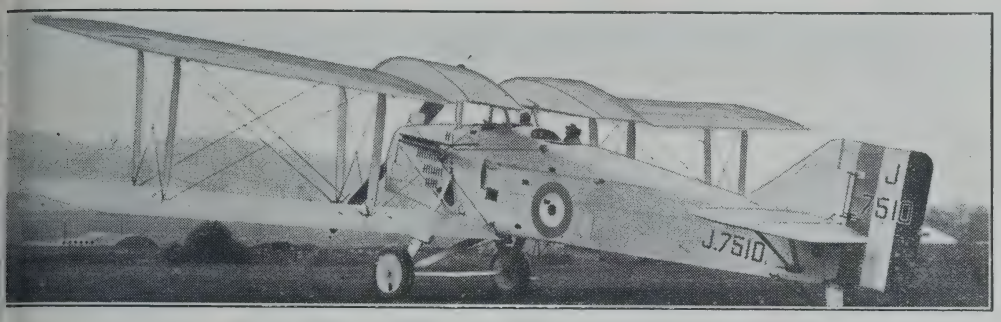
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ANALYSIS OF FIGURES FOR THE EASTER WEEK.

Trips per Day.—Monday, 13; Tuesday, 14; Wednesday, 16; Thursday, 22; Friday, 10; Saturday, 18; Sunday, 5.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 58, passengers 317, freight 14 tons.

AIR UNION:
Paris—London: Machines 28, passengers 167, freight 8¼ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 10, passengers 31, freight 1¼ tons.

PRIVATE:
MR. TRAVER'S D.H.9 to Berck and back, 1 passenger.

Total number of trips by British Machines, 60, carrying 318 passengers. Foreign machines, 38, carrying 198 passengers.

Comparative Figures:

Week ending Apr. 4:
Machines, 98; Passengers, 516; Crews, 125; Total personnel, 641.

Corresponding week, 1925:
Machines, 92; Passengers, 344; Crews, 116; Total personnel, 460.

Corresponding week, 1924:
Machines, 44; Passengers, 179; Crews, 76; Total personnel, 255.

Corresponding week, 1923:
Machines, 93; Passengers, 417; Crews, 156; Total personnel, 573.

Corresponding week, 1922:
Machines, 60; Passengers, 137; Crews, 100; Total personnel, 237.

Corresponding week, 1921:
Machines, 58; Passengers, 210; Crews, 78; Total personnel, 288.

Corresponding week 1920:
Machines, 36; Passengers, 45; Crews, 40, Total personnel, 85.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 16; Tuesday, 20; Wednesday, 17; Thursday, 14; Friday, 13; Saturday, 20; Sunday, 4.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 50, passengers 279, freight 9 tons.

AIR UNION:
Paris—London: Machines 39, passengers 197, freight 10 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 10, passengers 33, freight 1 ton.

PRIVATE:
DE HAVILLAND, 1 Moth to Paris and back with 1 passenger.
MR. LESLIE HAMILTON'S Vulcan and one passenger to Beauvais.
SURREY FLYING SERVICES: D.H.9 to Berck and back, passengers 52.

Total number of trips by British Machines, 55, carrying 283 passengers. Foreign Machines, 49, carrying 230 passengers.

Comparative Figures:

Week ending Apr. 11:
Machines, 104; Passengers, 513; Crews, 143; Total personnel, 656.

Corresponding week, 1925:
Machines, 98; Passengers, 422; Crews, 132; Total personnel, 554.

Corresponding week, 1924:
Machines, 37; Passengers, 156; Crews, 61; Total personnel, 217.

Corresponding week, 1923:
Machines, 93; Passengers, 366; Crews, 153; Total personnel, 519.

Corresponding week, 1922:
Machines, 96; Passengers, 171; Crews, 140; Total personnel, 320.

Corresponding week, 1921:
Machines, 55; Passengers, 183; Crews, 70; Total personnel, 253.

Corresponding week, 1920:
Machines, 44; Passengers, 46; Crews, 46; Total personnel, 92.

Croydon Notes.

The day of the single-engined machine is not yet over and done with. The D.H.34s are still running merrily on the Service with a reliability that makes their three-engined brother go dry with envy.

So far only one of the W.10s is actually running on the service. This is G-EBMR, which has already made several trips. The other three W.10s will go on the service at intervals of a few days after they have been thoroughly tested.

Another Jaguar engine met its "Athens" on Saturday. Shortly after leaving Croydon the Hampstead returned with one of her engines seized up solid. Everyone knows that the Jaguar is quite a good engine really, so in view of Mr. Cobham's trouble at Athens, and the mishap over Littlestone three weeks ago, and last Saturday's affair, it is really time that some explanation of this series of failures was forthcoming.

Lt.-Col. Minchin will start next month on an extended tour of Europe, and possibly Asia and Africa, with the Bristol Bloodhound with the Jupiter VI. The object of the tour is to prove further the reliability of the Jupiter VI when working away from its base.

The Fokker with the Jupiter engine is now running on t Amsterdam—London service. The speed of the machine very high, as Mr. Rogers discovered recently when he was a D.H.50. Mr. Rogers saw what he thought was an ordina Fokker F.VII in front of him and thought that he wo easily be able to overtake it. He was considerably surpris to find that the speed of this Fokker was as great as that the 50 and he could not make out why until he found arrival that it was a Jupiter-engined Fokker.

One has frequently remarked about the way in which Croydon publicist and the newspapers between them gar the names of machines. The prize however goes to *Daily Express*, which recently referred to a "large Ro Page air liner" which "Captain" Dismore flew through thick black cloud.

The Manchester Guardian telling the same yarn speaks "Rolls-Royce-Handley air liner." It is certainly nice friendly of the *Guardian* to use christian names, but why go the whole hog and call it a "large Charles-Freddy-Fred or Monty-Geoffrey air liner?"

The Surrey Licensing Committee have renewed the licen for the sale of intoxicating drink (doesn't that sound wicke for the Trust House. Some of the evidence given is too g to waste. The following appeared in *The Morning Post* Apr. 13:

Mr. F. Hinde opposed the granting of the licence on behalf of s members of the National Temperance Council, and giving evid in opposition, Mrs. Webb, of Purley, stated that she was a wo for the Christian Alliance for Women and Girls. Girls, she s visited the Aerodrome, especially on Sundays, and she appealed the Committee not to put temptation in their way.

The Chairman (Mr. Cecil Whiteley, K.C.) said the Committee not think any harm would result from the granting of a licence

Really the mentality of some people almost *drives* one drink. Anything sillier and more un-Christian than the dence of Mrs. Webb as reported would be hard to find. W girls should be "tempted" at Croydon aerodrome more t at a theatre, railway station or anywhere else where ther a bar it would be difficult to say.

At A.D.C. Aircraft Ltd. Mr. Perry has been busy test and demonstrating on a Martinsyde-A.D.C.I, a Martins Hispano and a D.H.9.

Major F. B. Halford, the A.D.C. engine specialist, and signer of the B.H.P., Puma, Cirrus, Airdisco and Nimbus gines, is to be congratulated on his recovery from his crash on Clapham Common. A big car skidded into him completely abolished his little Talbot, landing him un scious with the steering wheel in his hands. He woke u hospital wondering what it was about. But he was at w two days later.—G. D.

BERKSHIRE BUSINESS.

The Berkshire Aviation Tours continue to do excellent b ness wherever their machines appear. At two such wide a cities as Lincoln and Salisbury, during the week en Mar. 28, they took up over 500 passengers on the Satu and Sunday. Also over 2,000 people paid to watch the fly

The other day a party of people who hitherto had flown as joy-riders in the Berkshire Avros went with Holmes to Croydon where they had a flight in one of Napier-engined D.H.34 "giant air liners" (*vide* Press). Jones, the famous pilot of Imperial Airways, who formerly with Mr. Fred Holmes, of the Berkshire Comp took them round the country for about half-an-hour. the converts enjoyed the trip immensely and at least two making a cross-Channel trip in the near future.

It strikes one that as these very successful joy-ride f all over the country are really doing valuable work in verting passengers for Imperial Airways they ought s where or another to share in the subsidy, if only by wa receiving assistance in some way or another from monopoly air line.

During the Easter week-end they took up over 1,000 sengers at Salisbury and Doncaster in the four days.

One of the Berkshire pilots points out gleefully that drew these 1,000 passengers from two cities whose total p lation is less than 100,000, whereas, according to the of reports, our subsidised air line carried only 280 passen during the week-end joy-riding at Croydon, drawing fr population of over eight million.

Certainly the Berkshire people do know how to draw public.

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A RECORD OF ACHIEVEMENT.

Mr. Alan Cobham has written an account of his memorable flight to Cape Town and back, and it is to be published almost immediately by A. and C. Black Ltd. Besides its value as a survey of the possibilities of a commercial air route across Africa, the flight was as full of excitement and the romance of real adventure as any novel-reader would wish. The story is modestly yet graphically told. Many photographs were taken on the journey, and some fifty of these are being reproduced in Mr. Cobham's book, with a map upon which each day's flight is marked. "With Cobham to the Cape" will be published at a price which will enable everyone to possess the record of this modern adventurer.

HAROLDUS NON FUGIT.

The following has appeared in that ill-informed though well-printed American publication called Aero Digest :—

While making the sensational dash from Capetown to Cairo (described on page 196) the Royal Aero Club awarded the Britannia Trophy, for most meritorious performance by a British airman during the year, to Mr. Cobham for his 17,000-mile flight to Rangoon and back, carying Air Vice-Marshal Sir Sefton Brancker.

Unfortunately the above report is not true. It will be a great day for Aviation when the Royal Aero Club becomes such a meteoric body that it not only flies, but also conducts its ordinary business while making a sensational dash from Cape Town to Cairo, or even from Stag Lane to Croydon.

THE ROYAL AERO CLUB.

The Annual General Meeting of the Club was held on Wednesday, Mar. 31, Lieut.-Col. F. K. McClean presiding.

The Chairman in making a brief statement on the Club's activities during 1925 referred to the urgent necessity of largely increasing the membership of the Club. The Club's main object was the furtherance of Aviation, and the social side was purely a secondary object.

During the year the Club had distributed £1,670 in prizes and in addition had raised a fund of £1,000 towards the expenses of sending out the British Team to compete for the Schneider Trophy.

The Club had also distributed £760 through the Flying Services Fund to dependants and for the education of children of those killed in the War.

The Duke of Atholl was unanimously elected President and the Duke of Sutherland Vice-President of the Club for the year 1926.

The following members were elected to the nine vacanci on the Committee :—

Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C., Ernest Bucknall, The Lord Edward A. Grosvenor, Major Harold Hemmir A.F.C., E. J. B. How, Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieu Col. J. T. C. Moore-Brabazon, M.C., M.P., Lieut.-Col. M. O'Gorma C.B., Air Commodore C. R. Samson, C.M.G., D.S.O., R.A.F.

[Possibly if the Club were a better social club it might ha more influence in the furtherance of Aviation. Or, faili that, it might do better work if entirely dissociated from t social side, as is the N.A.A. of America.—C. G. G.]

AIRWORTHINESS FORMS.

A very useful form of Daily Certificate of Safety of Aircra has been issued by M. S. Dodds, Printers, of 61-63, Quaysid Newcastle-on-Tyne. The forms are designed in accordan with paragraph 10 of Schedule 2 of the Air Navigation Ord 1922 and are calculated to reduce to a minimum the work ground engineers and pilots in certifying the daily airworth ness of their machines.

The price of each book of 100 forms in duplicate is 4s. 6 for an order for six books. But in quantities of 48 books t price comes down to 2s. 6d. per book. The forms have be produced by Mr. Brian M. Dodds, who will be well reme bered by the old-timers of aviation as being a partner in t Howard Flanders machines at Brooklands in 1911, and la a Major, R.A.F.

COPENHAGEN—TOKYO.

On Apr. 10 Lieut. Botved of the Danish Army, who attempting to fly from Copenhagen to Tokyo on a Fokker C (450 h.p. Lorraine-Dietrich engine), arrived at Hanoi fr Bangkok.

It will be recalled that he was accompanied by anot officer, Lieut. Herschend, who owing to being forced to la in a rice field near Rangoon was forced to abandon the flig until his machine could be repaired. He proposes to rej Lieut. Botved on his return from Tokyo and fly with him Copenhagen.

On Apr. 12 Lieut. Botved arrived at Canton from Hanoi.

His departure for Shanghai is uncertain owing to the b state of the aerodrome.

BRUSSELS—KINSHASA—BRUSSELS.

On Apr. 6 Lieuts. Medaets, Verhaeghen and Adjt. Coppe who have flown from Brussels to the Belgian Congo and ba as far as Cairo on a Breguet XIX biplane (500 h.p. Hispa

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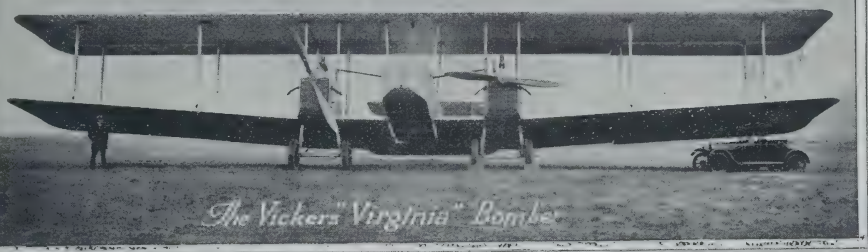
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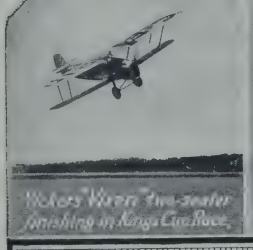
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Suiza engine), arrived at Athens from Cairo on the return journey.

On Apr. 8 they left Athens at 06.30 hours and arrived at Belgrade at 11.30 hours.

At that place they were mud-bound as owing to the exceedingly marshy condition of the aerodrome, which lies below the level of the Danube, it was impossible to find a place from which to take off.

Hard luck being bogged in Europe after navigating the Congo area, and holding rigorously to their programme of seven stages out and seven home.

On Apr. 12 they left Belgrade at 08.30 hours and landed at Evere aerodrome, Brussels, at 14.30 hours.

A great reception was accorded them on arrival at Brussels and among the first to offer congratulations were their Majesties the King and Queen of the Belgians and Princess Marie José.

It is interesting to record that they left Brussels on Mar. 9, reached Kinshasa on Mar. 21, left again on Mar. 29, and arrived at Brussels on Apr. 12, and during the period they covered 11,400 miles in 14 stages, seven out and seven return, to a fixed time-table, with the exception of a slight delay at Belgrade, where they were held up by the wet state of the aerodrome, as mentioned above.

MADRID—MANILA.

On Apr. 6 Capts. Estevez, Loriga and Gallarza, who are attempting to fly from Madrid to the Philippine Islands on three Breguet XIX biplanes (450 h.p. Lorraine-Dietrich engines) left Algiers for Tripoli. Two reached Tripoli but the third, Capt. Estevez, was forced to land at Tunis where he damaged his undercarriage and had radiator trouble.

On April 7, the first two reached Benghazi and Capt. Estevez left Tunis for Tripoli.

On Apr. 8 Capts. Loriga and Gallarza arrived at Cairo and Capt. Estevez arrived at Benghazi from Tripoli.

On Apr. 9 Capt. Estevez arrived at Cairo, thus catching up with his companions who had preceded him by one stage from Algiers.

On Apr. 11 the three aviators left Cairo and two of them arrived at Baghdad on the same day.

Up to Apr. 12 no further news had been received as to the third aviator, Capt. Estevez.

The R.A.F. at Amman are sending out four machines to search for him as his machine is not equipped with wireless and it is expected that he has forced-landed in the desert between Amman and Baghdad.

PERSONAL NOTICES.

Deaths.

GERMAIN.—On Apr. 10, at Henlow, as the result of a flying a dent, L-AC. Reginald Richard Germain, R.A.F., of Helston, Cornw

LACEY.—On Apr. 10, as the result of a flying accident, Cha Victor Lacey, A.F.C., Flg. Off., R.A.F.

Mr. Lacey served with distinction during the War, 1914-18, and awarded the A.F.C. in the New Year Honours of 1919.

He was at Gosport for four years with 210 Sqdn., and then at Base. In June, 1924, he was posted to the Experimental Establi ment at Martlesham Heath, where he specialised on engines. August, 1925, he joined the Inland Area Aircraft Depot at Henlow.

LLOYD.—On Apr. 4, at Arawali, India, as the result of a fly accident, David John Lloyd, Flg. Off., No. 60 (Bombing) Sqdn., R.A

Mr. Lloyd was a son of Mr. L. T. Lloyd, of Grove House, Brandf Worcester, and Dolgelly, N. Wales, and brother of Flt. Lt. H. Lloyd, M.C., D.F.C., R.A.F. He was educated at Worcester Cathe King's School. He served during the War, 1914-18, with the Wiltsh Regt., and as a Temporary Capt. was badly wounded at the tak of Vimy Ridge. He then joined the R.A.F. and went out to Eg and Mesopotamia, rejoining his Regiment in Dublin after the w

In July, 1924, he rejoined the R.A.F. with a S.S. comn. and posted to No. 4 F.T.S., Abu-Sueir. In Septemer, 1925, he appointed to No. 60 (Bombing) Sqdn., R.A.F.

SCOTT.—On Apr. 10, at Henlow, as the result of a flying accid in his fiftieth year, William Scott, Flg. Off., R.A.F.

Mr. Scott was formerly a Petty Officer, R.N., and served in R.N.A.S. during the War, 1914-18. He was promoted to the rank Flg. Off., R.A.F., in 1918, and posted to the Inland Area Airc Depot at Henlow in March, 1921.

SIMMONDS.—On Apr. 10, at Henlow, as the result of a flying a dent, AC.1. James Williams Simmonds, of Fowler Street, Portsmout

VEZEY.—On Apr. 4, killed in a flying accident at Arawali, In Walter John Vezey, Lieut. the Corps of Royal Engineers, attac the Royal Bombay Sappers and Miners, dearly-loved second son Mr. and Mrs. Peter Vezey, of 36, Queen's Avenue, Muswell H aged 25.

YOUNG.—On Apr 10 at Henlow, as the result of a flying accid L-AC. Basil Henry Young, R.A.F., of Church Street, Leighton Buzz

Forthcoming Marriage.

ROUPELL—KIRKE.—The engagement is announced betw Charles F. Roupell, R.A.F., youngest son of the late Col. F. F. Roupell, East Surrey Regiment, and of Mrs. Roupell, of Shalf Surrey, and Dorothy Una, elder daughter of Mr. and Mrs. J. Jo stone Kirke, of Rossend, Guildford.

Births.

HOLMES.—On Apr. 6, at 5, The Mount, St. Leonards-on-Sea, Rosa, wife of A. J. Holmes, R.A.F.—a daughter.

WEARE.—On Apr. 5, at Ferndale Lodge, Tunbridge Wells, to M (*née* Cherry-Downes), wife of Flt. Lt. F. G. C. Weare, M.C., R.A.F. (retired)—a daughter.

WRIGHT.—On Apr. 4, at 8, Glebe Place, Chelsea, to Flt. Lt. Mrs. Frank Wright—a daughter.

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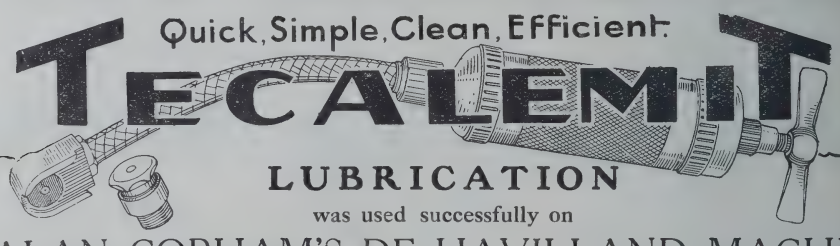
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INCORPORATING AERONAUTICAL ENGINEERING
Edited by C. G. Grey

Vol. XXX. No. 16. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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(The motto of the R.A.F. Medical Branch.)



A FAIREY AMBULANCE:—This machine, which is equipped as an ambulance, has been doing good work in British Guiana. Strictly speaking it is not entitled to the R.A.F. Medical Branch motto. But the recommendation "Do not be terrified of the bitternesses (of life)," or to be even more free "Keep your tails up," applies equally to all such craft. Incidentally the motto does *not* mean "Do not be afraid of (prescribing) aspirin," though that might appear to fit.

MAY 10 1926

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5—Instruction can be given, and a good landing view obtained, from front *or* rear cockpit. Machine can be flown with equal facility from either.

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APRIL 21, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 16.

The Editorial Offices of "The Aeroplane" are at 175 Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Brea n's Buildings, E.C.4.
Telepho e: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s. Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8s. U.S.A., 1 Year, $8 50c.

ON THE FUTURE OF FLYING.

The Royal Aero Club's Fifth House Dinner was really ther a dull affair. The guest of the evening was Sir Samuel oare, Secretary of State for Air, and consequently everyody was on his best behaviour, with the result that people ther talked platitudes or said things which were calculated please the Secretary of State or merely argued deferentily on Air Ministry policy. Still some of the phrases and sts and ideas are worth recording,—and some of the statents have driven one to retaliatory comment.

The other guests of the evening were Mr. Harry F. Guggenim and Rear-Admiral H. I. Cone, who have just come back England after a tour of investigation on the Continent udying aeronautical development in the interests of the Daniel uggenheim Fund for the Promotion of Aeronautics. And eir presence may also have curbed the exuberance of the ebaters, either out of respect for American ideas of propriety, as expressed in terms of moral turpitude, or because me had hopes of benefiting from the Guggenheim milons. After the usual excellent dinner provided by Mr. Frisee, who seems to have acquired Moses' knack of producing anna in the wilderness, Lieut.-Col. Moore-Brabazon, M.P., ho was in the chair, opened the proceedings by presentig the Britannia Trophy given to the Club in 1912 by Mr. loratio Barber, to Mr. Alan Cobham "for taking Sir Sefton rancker to Rangoon and back," as he put it. He also resented to Mr. Cobham the highest honour bestowable by ie Royal Aero Club, namely, its Gold Medal, which drew om Mr. John Lord the not very *sotto voce* remark "Is his ame Cobham or Cop'em?"

The Bronze Medal of the Club was presented to Mr. Elliott, to whose engineering skill Mr. Cobham acknowledges himself indebted for his successes.

Mr. Cobham, replying for both, said that their best reward was the pleasure they derived from handing out aviation propaganda, not only for the British but for everybody. He said that they hoped to do so for many years to come. He acknowledged Sir Sefton Brancker's complimentary remark that he was the first person to be awarded the Britannia Trophy twice.

The Discussion.

The subject for discussion for the evening was The Future of Flying. Practically everybody avoided the subject, and not one person touched on the keys to the future of flying, which are:—(A) The popularising of Civil Aviation through co-operative flying, by means of the flying clubs, and (B) The production of an aeroplane in the Moth power-class at something between £350 and £500, by means of entirely revolutionised methods of construction of machine and engine.

Lieut.-Col. Moore-Brabazon expressed his appreciation of the presence of the Secretary of State for Air, because Sir Samuel was a monitor when he (Col. Brabazon) was a small boy at a certain school. He said that Sir Samuel had put up such a fine fight for the R.A.F. as few could appreciate, and he knew what a difference there would have been in the R.A.F. if it had not had Sir Samuel to back it.

Introducing Mr. Guggenheim and Admiral Cone, he said that they had a vast store of gold to distribute.

On the future of flying Col. Brabazon said that he objected to being seasick and he objected to the noise in aeroplanes and he had an almost London County



A FINE EFFORT.—The First Public Display given by a Flying Club. By courtesy of "The Manchester Guardian" readers of "The Aeroplane" are given this excellent aerial view of the First Aviation Meeting of the Lancashire Aero Club, on Sunday, Apr. 18. Estimates of the attendance vary between 15,000 and 25,000. Over 1,000 cars were present. An account of the proceedings will be found in the pages allocated to the Flying Clubs. The Club is to be congratulated on its success and on having had the courage to hold its display on a Sunday, when people are free to go and see flying.

Council dislike to the proximity of petrol. He asked for more imagination in aircraft design, and said that just as aeroplanes got into pockets so designers got into grooves [Mr. John Lord here remarked that what they wanted was to get their hands into the Air Minstry's pockets], and he said that some people had bees in their bonnets about design [Mr. Lord remarked that what they wanted was *bawbees* in their pockets].

Sir Samuel Hoare opening the discussion said that he did not know whether he was Daniel in a den of lions or a lion in a den of Daniels, surrounded as he was by pioneers. Col. Brabazon was one of the first people to fly in this country and Col. McClean was the only person in history to present a complete aerodrome to a nation.

He said he was nervous of looking too far ahead. He was not going to prophesy that the Air Force would be the only fighting Service. Being a politician he had the habit of looking only to to-morrow and next week.

On the military side he said that the creation of air forces had placed the British Isles at a disadvantage. Air forces produced the problems of air attack and of finding money for new kinds of Imperial Defence. In that way we should have been better off without aviation. Consequently we had to find advantages in it. We must look to making our Imperial Defence more mobile and therefore cheaper. The Empire must be made stronger because of the Air Force.

Of Civil Aviation he said that from general conversation he found that public interest was increasing and more widely diffused. Civil flying must cease to be a stunt and must become a means of getting about.

Ascribing his views on technical matters to his "advisers," he said that he was impressed by our present standard of safety and thought that no great progress in this respect was to be expected in the near future. [Here one disagrees entirely from Sir Samuel and his advisers. If designers had enough enterprise we should have within a year non-stalling non-spinning machines which would land as slowly as an Auto-Giro. And if the Air Ministry experts had more intelligence, all R.A.F. accidents caused by stalling and nose-diving wou be stopped within six months.]

Speed of communication should be increased by night fl ing, particularly on the route to India. Multiple engines a wireless might help. Meteorology was making considerab progress and forecasts were reasonably correct. He hop that we should make this Empire the leading Air Power the World.

Another American View.

Mr. Harry Guggenheim explained his (purely imaginar inability to express himself well by the fact that he had be educated at Cambridge. He said that he and Admiral Co had visited Europe to formulate a policy for the expenditu of the hoard of gold of which Col. Brabazon had spoken, a they had got general ideas on how to promote aeronautics.

He said that flying must be made fool-proof and flying mu be taken out of the hands of fools. [One congratulates M Guggenheim on this phrase. It deserves to become histor and will probably be quoted many times in future in Th Aeroplane in many connections.]

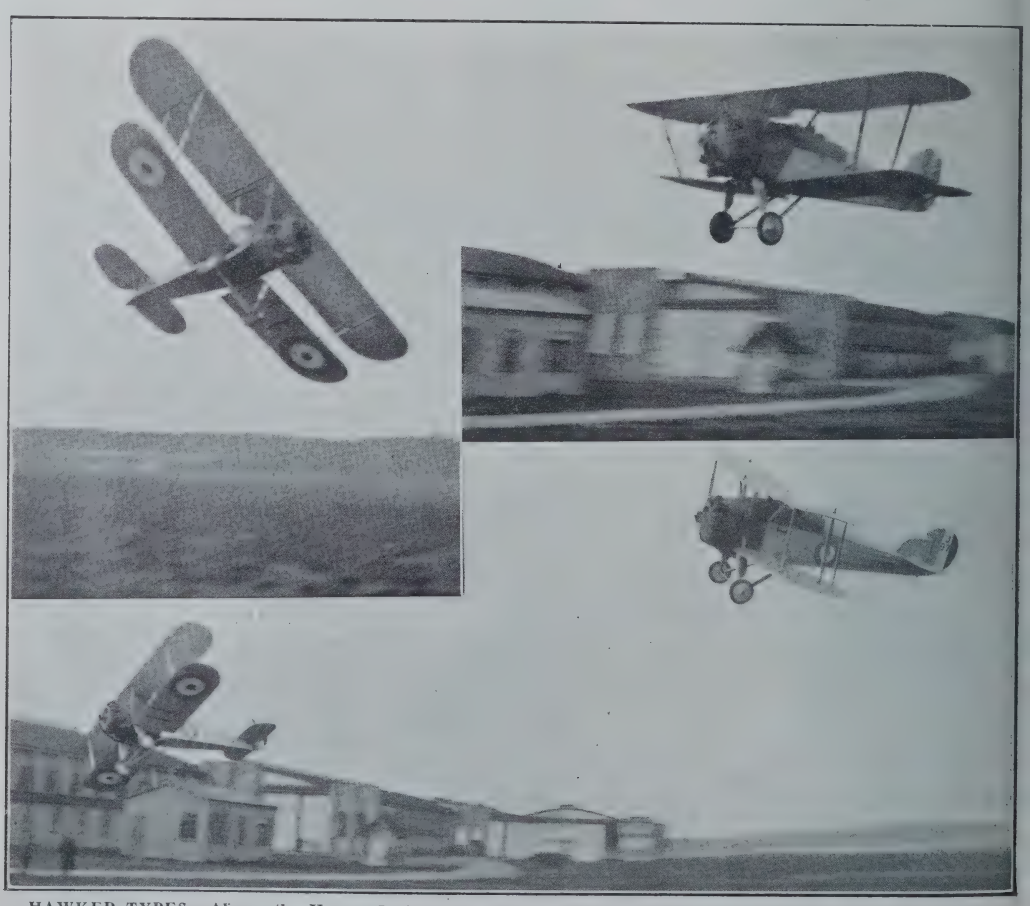
He said that making aviation fool-proof meant advancir the science of aerodynamics, reducing stalling speeds a landing speeds, the perfection of multi-motor planes, elim nating fire hazards, and developing such things as the Aut Giro and tail-less aeroplanes.

Taking flying out of the hands of fools meant perfectir ground organisation. [Which is what The Aeroplane h been preaching for years.]

He said that progress in organisation could go hand in han with progress in aerodynamics.

In Germany he had been impressed by the progre forced on the nation by the Treaty of Versailles. Restri tion of Military Aviation had unshackled Civil Aviation. Th salvation of aviation in Europe had been subsidies. In th States they had one mail air line but no civil air transpor Only one line in the World was paying its way, that was th one up the Magdalena River in Colombia.

In Europe generally his greatest impression was that



HAWKER TYPES.—Above, the Heron (Jupiter Mark VI) is seen in two views. Below, the Woodcock (Jupiter Mark IV) is seen chasing itself—there are two photographs, which join in the middle of the shed in the centre.

"SO successful has the Napier proved for the Royal Air Force, for commercial flying and for racing purposes, that it can certainly to-day be claimed to have no superior in the World."

Overseas Daily Mail, 13th June, 1925

The Napier "Lion" was the engine used by Commandante Franco on his wonderful flight from Spain to South America, when he covered 6,259 miles in 59½ hours' flying.

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our richness in personnel. In the United States they were short of able men devoting themselves to aeronautics. He and Admiral Cone were taking back inspiration from the men they had met in Europe. [Here one entirely disagrees from Mr. Guggenheim. In the United States eighteen months ago one met men of ability at least equal to our best in Europe. And quite a number of them were undoubtedly superior in foresight, initiative, enterprise and energy to any except a very very few in this country or on the Continent. One has only to look at the performance figures of American Service aircraft and to look at the figures for the flying hours of American civil aircraft and to look at the mileage of the American trans-Continental air mail to realise that so far as ability is concerned America has no reason to be envious of Europe.]

THE S.B.A.C. CHAIRMAN.

MR. T. O. M. SOPWITH said that the future of aviation was the widest subject ever put for debate. He would like to compare the unknown future with the unknown past. He recalled that on one occasion he struggled across the Channel by air and was given the princely prize of £4,000 for doing it. [The reference is to Mr. Sopwith's winning of the de Forest Prize on December 18, 1910, a very great feat of which the present generation of aviators has probably never heard. On a Howard Wright box-kite with an E.N.V. engine he started from Eastchurch and landed 177 miles away, in Belgium.] He said that at that rate of remuneration for crossing the Channel Mr. F. L. Barnard would be worth about £12,000,000.

He recalled that Col. Brabazon had received £1,000 for flying a mile. [The reference here is Col. Moore-Brabazon's winning of *The Daily Mail's* Prize for the first mile flown over a closed circuit by an all-British aeroplane, on October 30, 1909.] At that rate modern pilots would receive remunerations such as could scarcely be extracted from Mr. Guggenheim.

Mr. Sopwith said that we had finished the War with the biggest and best Air Force in the World, and that he intended to continue to badger the Secretary of State till we were again in that position. In future wars the Air Force would be the predominant Service. Since 1918 development had not been standing still. Speeds were fifty per cent. greater. [One questions this statement. The D.H.4 was doing 135 m.p.h. in 1916, and the Martinsyde was doing 147 m.p.h. early in 1918. What Service machines for similar purposes are there in use to-day with such high speeds, let alone 50 per cent. higher, in spite of having engines of approximately 100 per cent. greater power?]

In conclusion Mr. Sopwith said that interest rather than finance kept people in aviation. The success of Civil Aviation in the States was due to the size of the country over which one could travel using the same language and the same currency. Our development must take place in the Empire.

He promised the Secretary of State that whenever he found his way to the Aero Club again he would always find two or three members ready to argue on any subject.

OUR GLOBE-TROTTER.

SIR SEFTON BRANCKER [who has *not* acquired an Amer accent] contradicted the Secretary of State flatly on points. He said that the Secretary of State did not depen his advisers, because he knew all about aviation himself. he should not be regarded as a temporary official, he sh be made permanent like M. Laurent Eynac in France, had survived in the same office through about seventeen di ent Governments.

Sir Sefton referred to the great efforts of the United St with their trans-Continental air mail journey of 2,500 m day and night. He said that Germany, being crushed d was getting away with Civil Aviation. In this country tary aviation was all that meant orders.

He said that twenty years ago the British Navy was finest advertising agent this country had, but now it was so. Mr. Cobham and Mr. Elliott had done more to Show Flag than anybody else since the War.

Flying as a passenger was a rich man's pursuit, and he only been able to pursue it at the expense of the British payer. As to the future he said that he was quite prep to take part in interplanetary intercourse. He believed Mars was the nearest planet, but he would prefer Venus.

WHY WE HAVE GOOD PILOTS.

MR. ALAN J. COBHAM said that the boy of the future w take to flying like riding a bicycle. The coming genera would have an aviation mentality.

Night-flying was not difficult anywhere outside Eu where, especially in North-Western Europe, we had to fl the worst conditions in the World. [Here also one disagr Mr. Cobham seems to have forgotten that one of his fi Continental flights ended in the Adriatic owing to a fo Venice, and that some of the worst weather is found betw Venice and the African coast. Personally one has met on the Hudson River, N.Y., just as bad as anything on Thames. And the whole East coast of Asia is notorious its fogs and its typhoons, as any seafaring man who kn Singapore, Hong Kong and Yokohama can testify. And three months in the year during the monsoon season, fl in India is almost impossible. And fog spoiled the C Town—Durban air line experiments. One prefers to rely the dictum of the late General Sir David Henderson, said, in the very earliest days of flying, that our uncer weather and our small enclosed fields would force Bri Aviation to produce the best aircraft and the best pilots the World, just as our rough seas and coasts had forced to produce the finest ships and the finest sailors.]

Continuing, Mr. Cobham said that we could fly anywh if we had landing grounds everywhere. We must deve the private owner but he must have ground organisation.

MISCELLANEOUS VIEWS.

MAJOR C. C. TURNER congratulated the Club on having guest Sir Samuel Hoare, whose hobby was flying. The



OUR SIMPLEST AEROPLANE.—The Hawker Heron (Bristol Jupiter Mark VI), flown by Mr. P. W. S. Bulman, getting off at Brooklands. The Heron's fuselage is built of square steel tubes held together by flat plates and bolts. It is as simple as a Meccano toy.


LEONARD BRIDGMAN
FAIREY
AVIATION·CO·LTD
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Ministry was keen to help, but its help was confined to one company and to the flying clubs. He suggested that private owners of aircraft might be exempted from Income Tax up to £800 or £1,000.

Capt. W. H. Sayers said that the Secretary of State had an excellent idea of the possible future of flying. But what interested us was the probable future. The Industry was State controlled, which made it safe to say that the probable future meant being ten years behind other civilised countries.

The Air Ministry had an excellent technical staff. It would be a good thing to give them money and let them develop aircraft on their own lines. But money could not develop aircraft when it was under control. Safety first was an excellent motto for grandmothers in charge of children, but Aviation did not need grandmothering. [Again one disagrees. State control is the only thing which can force the naturally rebellious Englishman to show initiative. If the Trade were left free of control it would probably go to sleep. But the mere fact of being held on the curb keeps it up to its collar. The Englishman is like the English horse, you can do more with him with a bit than with a whip.]

Major F. A. de V. Robertson said that he believed the Australians were about to open a night-flying route between Perth and Adelaide. He advocated small three-engined machines.

Mr. Handley Page said that we were fortunate in having a Secretary of State who believed in practical flying. He had hoped for an imaginative picture of the future of flying. All we had been told was that we might fly from London to Moscow, which was the spiritual home of a party other than that of the Secretary of State. He remarked that some people were like a helicopter which supported itself in the air without forward progress. [How true of our Air Ministry experts.] He said that revolution would not bring progress. Progress could only be made step by step with organised research.

He remarked that the Admiralty had a Nautical Almanac and suggested that the Secretary of State might bring "Old Moore" into the Air Ministry. *The Morning Post* would probably be quite satisfied with the Air Ministry if it had an almanac.

Speaking seriously he said that he wanted to see a mobile Air Force to bind together Empire defence.

Mr. Colebrook advocated grants to local air routes in various parts of the Empire so as to establish air bases.

Mr. C. R. Fairey said that if he had Mr. Handley Page's Biblical knowledge he would knew better whether Daniel's visit to the lions was voluntary or not. He thought that private flying had greater chances in Australia and South Africa than even in the United States. In the States flying was free from restrictions. But, if restrictions here were removed, we should all be in the position of agitators without a grievance. If the restrictions were removed constructors would be able to go for speed and cheapness.

Lieut.-Col. Bristow emphasised the way in which the Air Force could decrease the expense of defence. He congratulated the Royal Aero Club on showing in 1926 an interest in aviation.

Lieut.-Col McClean, referring to the fact that the multi-engined machine was so much to the fore, recalled the f that the late Horace Short had built twin-engined machi in 1911-12.

Lieut.-Col. Brabazon closed the proceedings by remark that in spite of the references to his efforts as a pioneer p sonally he felt no older now than he did before he had e flown. [And, one may add, he hardly looks any older.]

The Future of Flying.

Perhaps here one may add one's own views of the future flying.

In the first place we must have the World's most power Air Force, and not merely as we have to-day, the best most efficient. To acquire it, the Air Staff must develop m foresight and intelligence, and must forget most of wha learned in the War 1914-18. Its ideas of Air Tactics and the types of machines needed must change. Every type machine at present in production for the R.A.F. will practically useless in the next war. All war machines m have a top speed of 200 m.p.hr. and must be able to la practically at a standstill.

The Department of Supply and Research must change ideas still more. It must put more reliance and respon bility on the Trade, and must cheapen production by rem ing the expenses caused by its experts. The Trade m stand or fall by its own ability to design and construct w the R.A.F. needs. It must not be spoon-fed. It must curbed by insistence on high performance, and high fact of safety and high ratio of top to low speeds, and it m be encouraged by big orders at reasonable prices. Thus R.A.F. will get more aircraft for less money.

The Trade firms must learn to take ordinary commerc risks, by producing new designs in competition with ot firms. They must discover how to build aeroplanes and gines at half their present cost, by "simplicating and add more lightness" to quote Mr. Bill Stout.

Civil Aviation must be popularised by co-operative flyi Those who cannot aspire to be owner-pilots can at least regular flying members of Flying Clubs. New Trade fi may arise with new ideas to show the older firms how build cheap aeroplanes and engines, so that private own and clubs may be able to operate cheaply.

Thus we may become an air-minded nation. And thus may come into our proper heritage as the greatest Air Po in the World.—C. G. G.

SEAPLANE TRAFFIC IN BERLIN.

The Times correspondent in Berlin, in a message da Apr. 15, states :—

The Berlin Municipality has under consideration the proposa the Air Port Company, in which the city has a controlling inte that in addition to the Tempelhofer Feld, Berlin should be prov with an air port for the use of seaplanes. It is argued that t is good reason to expect considerable developments in seaplane tr along the German waterways.

The Municipality has decided to act on the suggestion and has c to the conclusion that the only suitable stretch of water in neighbourhood of Berlin is the Müggel See. This is the largest in the district, and it is not, like the Wann See and the Tegeler regularly crowded with small boats.



GOOD AND SIMPLE.—The Hawker Heron (Jupiter Mark VI engine) at Brooklands. The Heron is designed for simplicity of construction and is a real "mass-production" job, besides being very easy to repair.

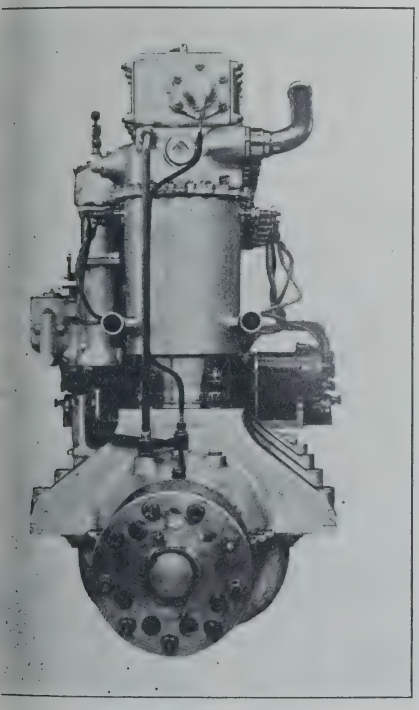
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AN IMPORTANT ANNOUNCEMENT.

The 300/330 h.p. A.D.C. "NIMBUS" aero engine recently produced by this Company has satisfactorily passed the Air Ministry Type Test and two other engines have run over 200 hours and given every satisfaction, both on the bench and in the air.

The main features of this engine are as follows:—



300/330 h.p. A.D.C. "NIMBUS."

LIGHTEST ENGINE PER H.P. OF ITS TYPE.

EXCEPTIONALLY LOW PETROL CONSUMPTION.

INSTALLATION INTERCHANGEABLE WITH "PUMA"

LOW HEAD RESISTANCE.

SPECIFICATION.

Type	6 Cylinder in line, Vertical.
Cooling	Water.
Bore	152 m/m.
Stroke	190 m/m.
Normal r.p.m. ...	1,450.
Maximum r.p.m. ...	1,600.
Normal b.h.p. ...	305 @ 1,450 r.p.m.
Maximum b.h.p. ...	335 @ 1,600 r.p.m.
Petrol Consumption	.505 pts. (.286 litres) per h.p. hour.
Oil Consumption ...	.017 pts. (.009 litres) per h.p. hour.
Compression Ratio ...	5.4 : 1.
Weight, Dry	655 lbs. (297 kgs.)
Weight per h.p. ...	1.95 lbs.

ECONOMY.

We desire to draw special attention to the remarkably low petrol and oil consumption during Type Test of the "NIMBUS," which we believe constitutes a record.

Full particulars obtainable from the manufacturers:

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REGENT HOUSE,
89, KINGSWAY, LONDON, W.C.2.

Telephone: Regent 6240. Works and Aerodrome: CROYDON, SURREY. Cables: "Airdisco, London."

THE OVERSEAS LEAGUE AND MR. COBHAM.

Mr. Alan Cobham is really rather a wonderful person. Whenever he has to make a speech, which he does at the rate of about four a week, he has the knack of making his speech fit his audience and of raking up fresh ideas which are worth recording. On April 16 he was entertained by the Over-Seas League at the Criterion Restaurant. Sir Harry Brittain, M.P., took the Chair in place of Sir Ernest Birch, Chairman of the Central Council of the League, who was unable to be present.

Introducing Mr. Cobham Sir Harry Brittain recalled the fact that he himself had flown on Wilbur Wright's aeroplane at Le Mans in 1908 and that before that he had been in the habit of ballooning with the late the Honourable Charles Rolls. One confesses that one did not know that Sir Harry's aeronautical interests were as early as all that. And one's respect for him is considerably increased.

Advertising The Empire.

Mr. Cobham, remembering that he was speaking to the Over-Seas League, said that he himself must have been born an Imperialist, because even as a small boy he had always been keen on the British Empire. He said that for the next two or three years Aviation offered us the finest possible opportunity of advertising the Empire. At the present moment Aviation was spectacular and so it made good advertising.

The Navy used to show the Flag in the past, but now it was concentrated in small areas and Aviation had the chance of doing the advertising. He put the limit of time at two or three years because after that Aviation would be so ordinary that its advertising value would be gone.

[This is an astonishingly astute idea. One recommends it strongly to the Chief of the Air Staff and the other Members of the Air Council. The more the Air Force shows the Flag the better it will be, not only for the Air Force itself in such matters as recruiting personnel and getting money, but the better it will be for the Empire as a whole. But, if the Air Force is going to indulge in Showing-the-Flag tours, as the British Fleet used to do, it must improve its staff work and its ground organisation.]

Referring to his African voyage, Mr. Cobham said that in South Africa people thought that his was a wonderful achievement, but he told them that they would soon see half-a-dozen Service aeroplanes come along the same route to Cape Town just as an ordinary matter of flying, and turn round there and go back again strictly according to schedule. He was glad to see that the R.A.F. Cape Flight, now at Cape Town, had fulfilled his prophecy.

Reliability.

As to flying in England, he said that Aviation was actually the most reliable method of transport. If a special flight had to be arranged there was always a doubt whether motor-cars would arrive in time to meet the machine at the aerodrome, or whether train or boat connections would be up to time. In England there was also the weather to be reckoned with. But the one thing about which nobody ever seemed to have any doubts were the aeroplane and its engine. It was always taken for granted that they would do their work with trouble.

As to the educative value of Aviation Mr. Cobham that public ignorance of the geography of the Empire, es ally among schoolboys, was simply appalling. It accou largely for lack of Imperial intercourse.

His flight with Mr. Elliott to the Cape had showed th was easily possible to run a line from Cairo to Kenya, w would bring letters from Kenya to London in a wee against a month at present. When people began to thi Kenya as being only a week away from London they w take an interest in that country.

[That also is an extraordinarily sensible view. One re why people do not keep up correspondence with friend away is that it takes so long to get a reply to letters. In days of five-day and seven-day boats one corresponds friends in New York as frequently as one does with fri in any part of England. But when one writes to Aust knowing that it is going to be a matter of three month so before one can get a reply, one feels that it is neces to write a voluminous letter. As it is so difficult to find to write such a letter it probably only gets written on year. And if one is going to carry on correspondence o principle of only writing in answer to another letter it m that at best one can only exchange letters with a frien Australia four times a year. But bring the civilised par Australia within three weeks of London, so that one ca ceive a reply to a letter in six weeks, and then we sha a great deal nearer in thought to our Australian relative

Speaking to the Overseas Dominions in general, Mr. ham said that the people in power there should pay no a tion to aviation statistics in Europe. They were bad bec of the weather. But the Australian Air Lines were ab show 100 per cent. efficiency. He said that Imperial tion ought to be a great advantage to us. And he told think of the countries that have not got an Empire t courage them to fly. But, he said, we had got to develo aviation intellect in the Colonies.

He suggested that instead of spending money on expe railways in the Overseas Dominions it would be bett spend the money on airlines. There were some people wh the intellect of a previous generation. And there were people who could not learn. It would be very much b to remove them from power and leave the jobs open so people of understanding could take the jobs. When Aviation had got public support, other people would ha do what they were told.

Referring to their various flights, Mr. Cobham said much Mr. Elliott was responsible for their success. understood Elliott and Elliott understood him, and the bination was pretty good. He said that he had recently Mr. Emmott's film of their flight to the Cape, and it very fine. The public would in a few weeks see the co over which they had passed from the air as they had se He described how an aviator's conception of a country quite different from that of a man who travelled on the face.



A STUDY IN ATTITUDES.—Mr. Bulman on the Hawker Heron (Jupiter Mark VI engine) and, on the right, Mr. Bulman on the Hawker Woodcock (Jupiter Mark IV engine).

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A GLOSTER "GREBE" HARASSING THE MERCIAN CAVALRY IN THE RECENT ARMY MANŒUVRES.

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He expressed his gratitude to the financial support which his flight to the Cape had received from private individuals and firms and he said that the same people were going to finance the Australian flight on which he would be starting in a few weeks. He said that on this flight they were going to investigate the possibilities of subsidiary air routes to link with railways and boats. And he added that for the present the quickest way of getting to Cairo was by boat.

Proposing the health of the Chairman, Sir Arnold Wilson, K.C.I.E., C.S.I., C.M.G., D.S.O., who said that he had flown for some 400 hours in India and Iraq, in the course of a very interesting and amusing speech made one remark which deserves to be a classic in reference to scientists. He said that in all great discoveries such as steamboats, railways and aircraft there were three stages of mind among scientists. the first stage they said that it was impossible. In the seco stage they said that it might be possible but it was not pr tical. And in the third stage they said that they had kno it all along, and that was the most dangerous stage of all

Among the guests were :—Mr. Victor Gordon, High Commissio for Newfoundland; Mr. J. Howard, Agent-General for Nova Scotia, Mrs. Howard; Mr. W. C. Noxon, Agent-General for Ontario, and M Noxon; The Hon. H. P. Colebatch, C.M.G., Agent-General for Australia, and Mrs Colebatch; The Rt. Hon. Sir Joseph Co G.C.M.G., High Commissioner for Australia, and Lady Cook; T Hon. Sir James Allen, K.C.B., High Commissioner for New Zeala Lt.-Col Eccles Snowden, Agent-General for Tasmania, and M Snowden; and Capt. Hilton Philipson and Mrs. Hilton Philipson, M

THE MOTH AS A BUSINESS PROPOSITION.

There can be no doubt that given a good light aeroplane at a reasonable price there is already quite a big market for such products within the British Empire. What constitutes a reasonable price is of course open to debate. The man who wants to buy a private aeroplane thinks that something between £350 and £500 is quite enough. But the de Havilland Company, who may be taken as certainly the leading firm in the production of practical and airworthy light aeroplanes, ask £885 for a Moth and get it.

Nobody can accuse the de Havilland Company of profiteering, or of having unduly exalted ideas about what constitutes a fair profit. The firm is run in an extremely economical manner, in the cheapest possible premises, and its balance sheets show that it has never been greedy about profits. The chief people in the firm apparently live a quiet and rational existence without extravagant personal expenditure, so that one judges that they do not absorb much of the profits in the form of salaries. Therefore one may assume that at £885 the Moth represents only a fair and justifiable profit.

In conversation with Mr. St. Barbe, the Business Manager of the firm, the other day, one gathered that the firm's policy —and the de Havilland policy is always sound—is to reduce the price of the Moth as much as possible as soon as possible. But the reduction depends on production. Without hoping for anything like mass-production of light aeroplanes in the near future anything like a considerable increase in sales would enable the firm to reduce the price a lot.

For that reason it is interesting to record the fact that the sale of Moths has already been quite large and one feels that a list of the actual purchasers of these machines is well worth publishing. This list is as follows :—

10 to the Light Aeroplane Clubs.
1 to the Controller of Civil Aviation for Australia, in Melbourne.
2 to the Royal Australian Air Force.
3 to the Air Ministry (one to the technical department, and two to the Central Flying School).
1 to Chile.
6 to the Australian Light Aeroplane Clubs (one at Melbourne and one at Sydney) which are supported by the Government as are our clubs.
4 to the de Havilland School.
2 being constructed for the London Aeroplane Club.
1 being constructed for the Yorkshire Aeroplane Club.
1 to Mrs. Elliott-Lynn and Mr. Jones in partnership.
1 to Mr. D. Kittel.
1 to Sir John Rhodes.
1 being constructed for Captain de Havilland's own use.
1 to Mr. F. B. Irvine of the Irving Air Chute Company.
1 to Mr. Munday.
4 to the Irish Free State Air Force.

Total, 40 Moths either actually delivered or being assembled.

Besides those mentioned above a number of other Moths are in process of manufacture. The firm is putting in hand four complete machines for stock—but one imagines that these will be bought before they are completed. Besides these, five or six others are being put through as component parts so that as they are constructed the parts can either be sold as spares or can be assembled as complete machines if ordered.

In addition quite a large quantity of such parts as are likely to need replacing are being put through the shops. Tail-skids, undercarriage parts, parts of tail units, ailerons, struts and so forth are being manufactured in excess of the sets for complete machines.

Thus it is hoped that whenever a Moth is damaged in any part of the country the damaged part can be replaced practically by return of post or on arrival of the next passenger train from London. In fact the idea is to have what amounts to a Service Depot at Stag Lane.

Mr. C. C. Walker, the technical chief of the firm, and his staff are constantly at work endeavouring to find methods of reducing the cost of production by introducing new jigs and tools. And they hope also to introduce entirely new constructional designs which will make possible further reductions.

Would-be purchasers must not expect to see the price of the Moth reduced by hundreds of pounds within a few months. Reductions must necessarily be gradual. But t reductions will certainly be made whenever possible. It not worth the while of any prospective customer to hold ordering a machine in the hopes of saving a large sum money by doing so. Delay in ordering merely means losi so much flying during the period of waiting, and to the wou be aviator that in itself means losing money. To put another way, supposing it were possible to save £50 on t purchase price of a machine by waiting for six months, sur the enthusiast would be willing to pay £50 for his flyi during those six months. Therefore it is quite worth wh to pay the money and have the machine.

One would also point out that the reduction in the pr of the Moth does not depend entirely on the de Havilla Company, it also depends on the people who make engin At the present moment the price of any engine of a pov which is applicable to a Moth is enormously high compar with the price of motor-car engines of approximately eq power. Naturally the cost of the engines, like the cost the aeroplanes, depends on the demand. And the cost is a kept up by the expense of satisfying the requirements of t Air Ministry's experts.

An engine which satisfies those requirements and passes t Air Ministry Type-Tests costs a good deal more than does engine which would probably give equally good service produced free from all restrictions. It should be possible produce quite a satisfactory engine for the purpose at sor thing below £100 instead of the £275 which the Cirrus eng costs at present.

The de Havilland Company has undoubtedly done a gr service to British Civil Aviation by producing the Moth, a one can only hope that as the demand for civil aeropla grows, and competition from other firms comes into bei the de Havilland Company will be able by reducing pri to get its full share of the business.—C. G. G.

ABOUT AERIAL £1-1-0 PIGS.

To-morrow, Thursday, Apr. 22, Capt. G. T. R. Hill w lecture to the Royal Aeronautical Society, at the Society Arts, John Street, Adelphi, at 6.30 p.m., on the Tail-less Ae plane.

For a considerable time, Capt. Hill, who is a brother Sq. Ldr. Roderick Hill, formerly in charge of experimen flying at the Royal Aircraft Establishment, has been exp menting at Farnborough with a small aeroplane of his o design which has no tail.

The idea of an aeroplane without a tail is not new. gliders, both man-carrying and otherwise, built by the Mr. José Weiss, and flown from Amberley Mount in Suss had no tails. And various other tail-less aeroplanes have b designed and/or built ever since. Only three or four ye ago the well-known French pilot, Adjutant Madon, made so short flights with a machine of this type at Etampes. experiments ended by breaking the machine and himself.

Just why people should want to build aeroplanes with tails one does not quite understand. Birds whose tails h been plucked (as by the "sportsmen" who shoot pige at Monte Carlo) fly very badly. On the other hand Ma cats seem to be fairly manœuvrable and under control.

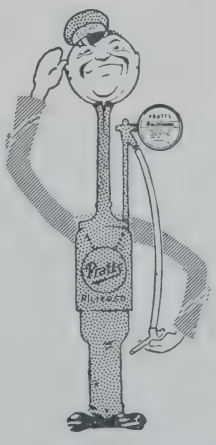
In a tail-less aeroplane the work of the elevator and rud has to be done by the ailerons, which seems to be putt a good deal of responsibility on those organs. In numer cases where ailerons or their controls have broken or h been shot away pilots have brought their machines dc safely by using their rudders and/or elevators. Consequer even if it be possible, as it certainly is, to control a mach adequately by the ailerons alone, it strikes one that rudd and elevators afford an additional measure of safety very m in the same way that a multiplicity of engines is suppo to increase the safety of flying.

At the same time Capt. Hill's experience as a pilot, and undoubted knowledge of aerodynamics, are a suffici guarantee that he is not merely an inventor with a cr notion. One hopes therefore to hear from him in his lect not only how and why a tail-less aeroplane works, but w it is worth while to build a tail-less aeroplane at all.—C. G.



The Airship NORGE *started with the right spirit—*

Leaving Pulham on Tuesday night, April 13th, after filling up with Pratts, the Airship "Norge" commenced the second lap of Capt. Amundsen's North Pole Adventure. The millions of my motoring friends join me in wishing the famous explorer "bon voyage" and success. I am particularly proud that my spirit—Pratts—is serving so great a cause



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THE ROYAL AIR FORCE.

The London Gazette.

April 13.

General Duties Branch.—H. T. Jagger is granted a S.S. comn. as a Flg. Off., with effect from and with seniority of, Apr. 12. The following Plt. Offs. are promoted to the rank of Flg. Off.:—W. Woollett, P. E. G Sayer (Mar. 30); E. L. Leader (Apr. 5).

Sq. Ldr. G. H. Bowman, D.S.O., M.C., D.F.C., is placed on half-pay, scale B, from Dec. 12, 1925, to Dec. 29, 1925, inclusive.

The following Flg. Offs. are transferred to the Stores Branch on probation (Apr. 6):—F. R. Lines. A. M. Reidy.

Flg. Off. G. R. Stafford is transferred to the Reserve, Class A (Apr. 26); Flg. Off. G. Horsfield (Lt., R.A.) relinquishes his temp. comn. on return to Army duty (Apr. 9); the notification in the *Gazette* of Sept. 25, 1925, regarding Flg. Off. F. R. Lynes is cancelled.

Stores Branch.—The following are granted perm. comns. as Flg. Offs. on probation, with effect from and with seniority of, Apr. 6:—O. G. Ridley, M.C. (Maj., R.A.R.O.), H. Seidenberg. G. L. Worthington is granted a perm. comn. as a Plt. Off. on probation, with effect from and seniority of, Apr. 6; H. M. S Dawes is granted a S.S. comn. as a Plt Off. on probation, with effect from and with seniority of, Apr. 6.

Accountant Branch.—Flg. Off. A. L. Palmer is transferred to the Reserve, Class C (Apr. 11).

Medical Branch.—Flg. Off. R. L. C. Fisher, M.B., is promoted to the rank of Flt. Lt. (Apr. 7); Flt. Lt. (Hon. Sq. Ldr.) E. Brown relinquishes his temp comn. on account of ill-health (Apr. 8).

Chaplains' Branch.—The Rev. M K. MacLeod, M.A., F.S.A., is granted a S.S. comn. with the relative rank of Sq. Ldr. (Apr. 1).

Reserve of Air Force Officers.—W. Steele, D.F.C., is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Apr. 13); Flt. Lt. T. A. G. Hudson is transferred from Class D II to Class D 1 (May 1, 1925).

Appointments.

Week ending Apr. 19.

General Duties Branch.—Air Vice-Marshal J. M. Steel, C.B., C.M.G., C.B.E., to H.Q., Wessex Bombing Area, Andover, on appointment as Air Officer Commanding, 12/4.

Air Commodores D. L. G. Pitcher, C.M.G., C.B.E., D.S.O., to No. 22 Group H.Q., S. Farnborough, on appointment as Air Officer Commanding on disbandment of No. 7 Group, 12/4. C. L. N. Newall, C.M.G., C.B.E., A.M., to Air Ministry, Directorate of Operations and Intelligence, on appointment as Director, and Deputy Chief of the Air Staff, 12/4.

Group Captain the Hon. J. D. Boyle, C.B.E., D.S.O., to H.Q., Wessex Bombing Area, Andover, for Air Staff duties, 12/4.

Wing Commanders M. Spicer, to H.Q., Wessex Bombing Area, Andover, for Technical Staff duties, 12/4. J. C. Quinnell, D.F.C., to H.Q., Wessex Bombing Area, Andover, Supernumerary, for temporary duty, 12/4. P. C. Maltby, D.S.O., A.F.C., to R.A.F. Staff College, Andover, Supernumerary, pending commencement of next Staff Course, 12/4. D. L. Allen, A.F.C., to R.A.F. Depot, Uxbridge, Supernumerary, pending disposal, 12/4. C. H. B. Blount, O.B.E., M.C., to No. 7 Sqdn., Bircham Newton, to command, 12/4. T. L. Leigh-Mallory, D.S.O., to No. 22 Group H.Q., S Farnborough, for Air Staff duties, 12/4. F. H. Unwin, O.B.E., to No. 22 Group H.Q., S. Farnborough, for Technical Staff duties, 12/4. J. T. Cull, D.S.O., to R.A.F. Depot, pending disposal on transfer to Home Estab., 30/3.

Squadron Leaders G. C. Bailey, D.S.O., to R.A.F. Depot, Uxbridge, 26/3. E. A. Beaulah, to R.A.F. Depot, Uxbridge, 6/4. C. E. H. Medhurst, O.B.E., M.C., to R.A.F. Depot, Uxbridge, 12/4. J. K. Waugh, D.S.C., to R.A.F. Base, Calshot, 26/3. H. S. Powell, M.C., to R.A.F. Depot, Uxbridge, 12/4. C. W. Mackey and the Hon. R. A. Cochrane, A.F.C., to H.Q., Wessex Bombing Area, Andover, 12/4. C. H. Nicholas, D.F.C., A.F.C., to No. 22 Group H.Q., S. Farnborough, 12/4. H. Cockerell, O.B.E., to Armament and Gunnery School, Eastchurch, 13/4. J. H. D'Albiac, D.S.O., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 7/3. A. P. Maurice, D.F.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 26/2. C. S. Wynne-Eyton, D.S.O., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 25/2.

Flight Lieutenants E. J. D. Routh, to R.A.F. Depot, Uxbridge, 8/4. F. Fernihough, M.C., to No. 16 Sqdn., Old Sarum, 8/4. R. W. Dawes, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 25/3. G. A. H. Pidcock, S. L. Quine, M.C., J. Lawson, I. Bussey, F. H. D. Henwood, D.F.C., and W. G. E. Hayman, to H.Q., Wessex Bombing Area, Andover, 12/4. W. F. Anderson, D.S.O., D.F.C., to No. 9 Sqd Manston, 1/4. T. F. W. Thompson, D.F.C., S. E. Toomer, D.F. R. M. Foster, D.F.C., and S C. Strafford, D.F.C., to R.A.F. Dep Uxbridge, 12/4. W. H. Park, M.C., D.F.C., to R.A.F. Depot, Uxbrid 6/4. R. P. M. Witham, M.C., to No. 16 Sqdn., Old Sarum, 1/4. H. Lloyd, M.C., D.F.C., to No. 3 Group H.Q., Spittlegate, 26/3. J. Bla ford, to No. 6 Group H.Q., Kenley, 12/4. A. G. Bond, A.F.C., R.A.F. Staff College, Andover, 14/4. J. H. Dand, M.B.E., to R.A Depot, Uxbridge, 1/4. C. K Chandler, M.B.E., and A. J. Osbo to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 26/2. G. Ranson, to Aircraft Depot, Iraq, 22/3. F. H. E. Reeve, to R.A Depot, Uxbridge, on transfer to Home Estab., 15/3. J. Oliver, A.F. to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 12/3. A. Orlebar, A.F.C., J. H. Butler, A. G. Jarvis, A.F.C., and C. N. Ell D.F.C., to No. 22 Group H.Q., S. Farnborough, 12/4. E. L. Ardley, Armament and Gunnery School, Eastchurch, 7/4.

Flying Officers J. V. Medcalf, to R.A.F. Base, Leuchars, on trans to Home Estab., 6/4. S. A. Lane, to No. 100 Sqdn., Spittlegate, 3 F. C. Marsh, to No. 5 Sqdn., India, instead of to No. 20 Sqdn., previously notified, 20/2. (Hon. Flt. Lt.) C. W. Croxford, D.S.C., No. 4 F.T.S., Egypt, 10/4. H. V. Mitchell, to R.A.F. Depot on trans to Home Estab., 26/3. C. H. F. Nesbit, W. A. D. Brook, C. J. Pool and A. E. Stewart, to R.A.F. Depot, Uxbridge, on transfer to Ho Estab., 12/3. W. F. Davenport, to R.A.F. Depot, Uxbridge, on trans to Home Estab., 23/3. G. Horsfield, to R.A.F. Depot, Uxbridge, transfer to Home Estab., 26/3. J. S. L. Adams, to No. 14 Sqd Palestine, 18/3. L. G. Pinnell, D. G. Pinnell and W. P. Wiltshi to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 26/2. F. Beamish, to No. 60 Sqdn., India, 15/3. W. J. Brett, to Armam and Gunnery School, Eastchurch, 10/4. H. L. Beatty, to R.A.F. Ba Calshot, 16/4. H. T. J. Jagger, to No. 24 Sqdn, Kenley, on appoi ment to a S.S. Comn., 12/4. H. F. V. Battle, to H.Q., Wessex Bombi Area, Andover, 15/4. J. F. Dewar, to H.Q., Wessex Bombing Ar Andover, 12/4.

Pilot Officers R. W. Holden, to No. 5 F.T.S., Sealand, on trans to Home Estab., 12/3. W. C. McNeil, to No. 5 F.T.S., Sealand, 6

Medical Branch.—Squadron Leaders J. M. A. Costello, M.C., M. M.Sc., to No. 22 Group H.Q., S. Farnborough, 29/4. T. J. Thom M.B., to R.A.F. Depot, Uxbridge, 12/4.

Flight Lieutenants J. A. Musgrave, D.P.H., to R.A.F. Hospit Cranwell, 12/4. A. Williams, to No. 5 F.T.S., Sealand, 10/4.

Stores Branch.—Squadron Leaders N. R. Fuller, to No. 22 Gro H.Q., S. Farnborough, 12/4. H. T. Foxen, to H.Q., Wessex Bombi Area, Andover, 12/4.

Flight Lieutenants E. D. Gallaway, to H.Q., Wessex Bombing Ar Andover, 12/4. T. Surr, to No. 22 Group H.Q., S. Farnborough, 12 E. H. Eldridge and H. E. Tansley, M.C., to R.A.F. Depot, Uxbrid 12/4. H. V. Robbins, to School of Store Accounting and Storekeepi Kidbrooke, 6/4.

Flying Officers R. M. Taylor, M.C., to No. 4 Sqdn., S. Fa borough, 1/4. P. Alderson, F. R. Lines and A. M. Reidy, to Sch of Store Accounting and Storekeeping, Kidbrooke, 6/4. O. G. Ridl M.C., and H. Seidenberg, to School of Store Accounting and Sto keeping, Kidbrooke, on appointment to Perm. Comns., 6/4. F. D. Gaussen, to R.A.F. Depot, Uxbridge, 12/4. Pilot Officers G. Worthington, to School of Store Accounting and Storekeeping, K brooke, on appointment to a Perm. Comn., 6/4. H. M. S. Daw to School of Store Accounting and Storekeeping, Kidbrooke, appointment to a S.S. Comn. (on probation), 6/4.

Accountant Branch.—Flight Lieutenant G. N Simon, to R.A Depot, Uxbridge, on transfer to Home Estab., 15/3. Flying Offi R. T. Rich, to No. 13 Sqdn., Andover, 1/4. Pilot Officer J. Welman, to No. 19 Sqdn, Duxford, 30/3.

Fatal Accidents.

The Air Ministry regrets to announce that as a result an accident at Amman, Trans-Jordan, to a D.H.9a of No. Squadron, on Apr. 17, Sq. Ldr. Harley Alec Tweedie, O.B.E A.F.C., and Flt. Lt. Stanley Harry Wallage, M.C., we killed.

The Air Ministry regrets to announce that as a result of accident near Lakeit, Iraq, to a D.H.9a of No. 84 Squadro Shaibah, on Apr. 15, Flg. Off. Jam Eric Tomes, the pilot of the aircra and No. 348244 L-AC Frank Edwa Leatherdale, were killed.



The R.A.F. Display.

The R.A.F. Display will be held Hendon on July 3 and the first event timed to start at mid-day.

A number of improvements are to made at Hendon for the comfort a convenience of spectators, including new enclosure where the machines we parked last year.

A new car-track is being made

AN INSPECTION.—Air Chief Marsh Sir Hugh Trenchard, Bart., G.C.B D.S.O., Chief of the Air Staff, inspe ing No. 602, City of Glasgow (Bombin Squadron, of the Auxiliary Air Forc at the Beardmore Aerodrome at Re frew. The A.O.C. Special Reserve a Auxiliary Air Force is Air Commodo J. G. Hearson, C.B., C.B.E., D.S.O. who is seen on the right, with downca mien. No. 602 Squadron is command by Sq. Ldr. J. D. Latta, M.C.

D·H

THE MODERN TRAINING AEROPLANE



THE DE HAVILLAND
"MOTH"

(Engine - 27-60 H.P. "CIRRUS.")

¶ The De Havilland "MOTH" has been designed entirely in the light of modern experience, and fulfils in every respect modern training requirements. Its controls are light, effective and straightforward at all speeds. It is fitted with a 4-cylinder air-cooled engine, which is as reliable as that of an automobile. Its fuel and oil consumptions for school work are less than four gallons and one pint per hour respectively.

¶ For convenience and easy transport it can be folded, and it is so light that it can be handled on the ground by one man.

¶ Both aircraft and engine are so simple to maintain that an owner pilot can keep a "MOTH" in flying order without skilled assistance.

¶ Every standard "MOTH" is supplied with a British Air Ministry Aerobatic Certificate of Airworthiness.

he "MOTH" is used by

ONDON AEROPLANE CLUB,
LANCASHIRE AERO CLUB,
E MIDLAND AERO CLUB,
NEWCASTLE - UPON - TYNE AERO CLUB,
YORKSHIRE AERO CLUB,
SYDNEY (Australia) AERO CLUB,
ELBOURNE (Australia) AERO CLUB,
DE HAVILLAND SCHOOL OF FLYING, EDGWARE,

and by many

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which traffic may enter the aerodrome from Montrose Avenue, which links up with Edgware Road to the North of Colindale Avenue. This car track will run along in front of the enclosures.

The Royal Box, the House of Lords enclosure and the House of Commons enclosure will be moved to what was the extreme right of the 10s. enclosure, a position which will command a better view of the proceedings. The new and experimental aircraft will be parked in front of the railway bank.

All these alterations and improvements will be made at the expense of the Display Fund and it is therefore to be hoped that the crowds for whose benefit they are being made will be larger than ever .

The programme of the Display will include various events which have proved popular in the past. And alterations in other events should increase their educative value.

The Group Evolutions, or formation flying by about 36 machines, which was so immensely popular last year, will remain. A Fighter Squadron will manœuvre by Radio Telephony. The spectacular low-bombing of a target will also again be part of the show. The more peaceful Message-picking-up Competition by Army Co-operation Squadrons, and an Instructors' Competition by the various Training Establishments will appear again.

A new item of the programme will be a long-distance cross-country race by four Night Bombing Squadrons. Eight machines from each Squadron will take part and the race will be flown in formation. The Squadrons will be handicapped according to types and will have to report by wireless from various points during the race.

Rumour has it that the R.33 airship will appear and drop aeroplanes.

The set-piece will be the bombing of an enemy aerodrome.

The Stores Branch R.A.F.

Owing to a shortage of officers in the Stores Branch of the R.A.F. the Air Ministry has decided to offer permanent commissions in this Branch to a certain number of men between the ages of 23 and 25 who have had about five years' business experience.

Originally the commissioned ranks of the Stores Branch were to have been supplied by transfer from the General Duties Branch and by the Short Service Scheme. Owing to the length of training required to make an efficient Stores Officer the Short Service Scheme is impracticable. The number of transfers from the Flying Branch owing to ill-health and other causes has not come up to expectations. But it is on account of these transfers that the age under the new scheme is as high as 23-25, this being nearer the age at which the G.D. Branch officer is transformed than if the new commissions were offered at 18.

A further explanation of the age qualifications is that the Air Ministry hope to get men who have had some years' training on business lines, in order that they may be suited to control and administer the supply of the highly valuable and complex equipment of the R.A.F. The argument that an even older man would be more responsible is justifiable, but that would increase the pensionable age—which now starts at 45.

Candidates for commissions under the new scheme will be required to pass a medical examination for general service (at home and abroad) and will be nominated to attend a competition held by the Civil Service Commission in London in the third week in July. This competition will consist of an interview before a board and a written examination in English, general knowledge and arithmetic.

Accepted candidates will be gazetted as Pilot Officers on probation and will receive six months' training. After a year's satisfactory service they will be eligible for confirmation in their appointments. The pay and allowances amou to £401 for Flying Officers. Provision has now been ma for a Group Captain in this Branch.

Enquiries for copies of the regulations and for applicati forms should be made in writing to the Secretary, Ministry. Completed application forms must reach the Ministry by June 7.

The R.A.F. Cairo-Cape Town Flight.

The following telegram has been despatched by Sir Sam Hoare, Secretary of State for Air to the South African Minis of Defence.

On arrival of flight of Royal Air Force at Cape Town I desire thank you and your Government for assistance freely given by Force of Union of South Africa and Union authorities generally. trust that the visit of these four machines will serve to promote very cordial relations which have always subsisted between the Ro Air Force and the Air Force of the Union of South Africa and to k the two Services in the closest touch.

The Secretary of State for Air has also sent the followi telegram to Wing Cdr. C. W. H. Pulford, O.B.E., A.F. *p.s.a.*, Officer Commanding Royal Air Force Cape Flight

I congratulate you and those under your command on a m meritorious achievement. The arrival of four service machines fr Cairo at the Cape marks a real advance on previous flights by sin aircraft. I wish you all success on the return journey. The c pletion of your flight will be a convincing demonstration of increasing mobility of the Air Force and the great potentialities Imperial Defence of which, with adequate organisation, this mobi gives promise.

The following reply has been received by Sir Samuel Hoa Secretary of State for Air, from the Minister of Defence the Union of South Africa :—

Thanks for your message and hearty congratulations on succes flight lessons of which will be a great value to South African Force. Union Government, only too happy to afford assistance welcome this first flight to Union of R.A.F. and reciprocate your de to promote cordial relations between the two Air Forces.

The Cape Flight, R.A.F., under Wing Cdr. C. W. H. F ford, O.B.E., A.F.C., left Wynberg Aerodrome, Cape To at 10.00 hours on Apr. 19 on the return flight to Cairo. T flight will visit Kimberley and Nairobi on the return jour and will spend a week at Pretoria.

The Reorganisation of the R.A.F.

The R.A.F. Appointments list for the week ending Apr. shows the beginning of the reorganisation and regroup of Units under the Home Defence scheme.

The Air Defences of Great Britain, under Air Marshal John Salmond, will, as has already been stated, be divi into a Fighting Area and a Bombing Area.

The Fighting Area, under Air Vice-Marshal H. R Brooke-Popham, will include all the Home Defence Figh Squadrons. No. 6 Group, Kenley, will be absorbed into t Area.

The stations under this command will be Duxford, Ca bridge; Northolt, Middlesex; Kenley, Surrey; Biggin H Kent; Hawkinge, Kent; and Upavon, Wilts. The compo tion of the area will be as follows :—Nos. 32, 24 (Communi tion), 56, 41, 25, 17, 19, 29, 111, 3, 23, and 43 Squadrons, Night Flying Flight at Biggin Hill, and the Communicat Flight at Northolt.

The Wessex Bombing Area, under Air Vice-Marshal J. Steel, has its headquarters at Andover and has absorbed No Group. All Home Defence Bombing Squadrons come un this command.

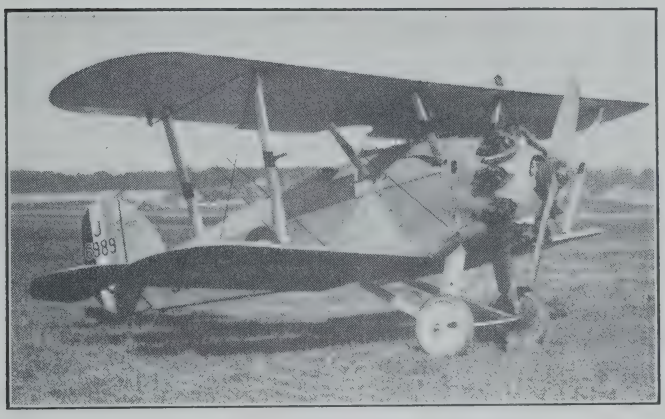
The stations are :—Andover, Hants; Worthy Down, Han Netheravon, Wilts; Spittlegate, near Grantham; and Birch Newton, Norfolk. The units comprising the area are eit single or twin-engined bombers and comprise the following Nos. 12, 58, 11, 100, 39, 7, 99, 9, and 207 Squadrons. The la named are at Manston and Eastchurch, respectively, present.



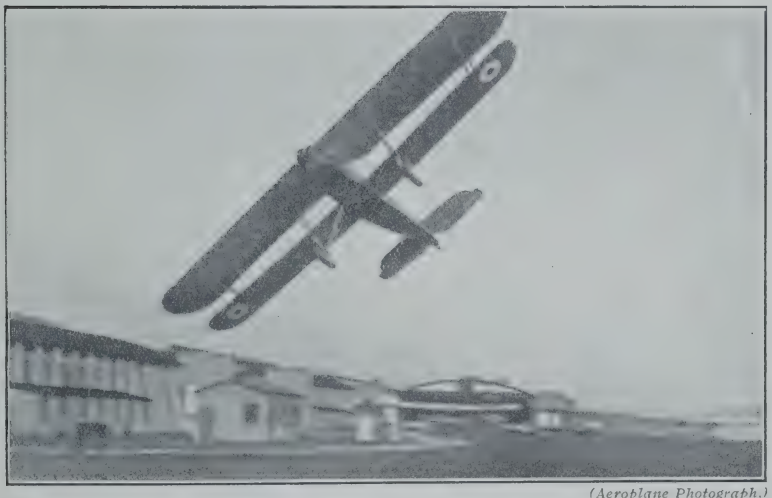
THE CAPE FLIGHT, R.A.F.—The four Fairey III.D machines (Napier), fitted with land undercarriages, which started from Cairo on Mar. 1 and arrived at Cape Town on Apr. 12. In a telegram to Wing Cdr. Pulford, O.B.E., A.F.C., Officer Commanding the Flight, the Secretary of State for Air said : "The completion of your flight will be a convincing demonstration of the increasing mobility of the Air Force."

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THE HAWKER HERON METAL FIGHTER.



(Aeroplane Photograph.)

THE HAWKER HORSLEY (ROLLS-ROYCE CONDOR).

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The Special Reserve and Auxiliary Air Force Units come into a separate command under Air Commodore Hearson.

The aerodromes under its command are Renfrew, Turnhouse, and Aldergrove. The units so far constituted are No. 502 Special Reserve (Ulster) Bombing Squadron; No. 600 (City of London); No. 601 (County of London); No. 602 (City of Glasgow); and No. 603 (City of Edinburgh) Bombing Squadrons. The two London squadrons are now located at Northolt.

The Coastal Area remains unchanged.

The Inland Area, whose headquarters are shortly to be moved to Bentley Priory, is being reorganised into three Groups.

No. 21 Group replaces the former No. 1 Group at Kidbrooke, and its headquarters are at West Drayton. The stations are at Kidbrooke, Altrincham, Milton, Ickenham, Ascot, Uxbridge, Shrewsbury, Henlow, Martlesham, Orfordness, and Ruislip, and comprise stores depôts, schools and repair depôts, and two Bombing Squadrons, Nos. 15 and 22, at Martlesham.

No. 22 Group is forming at Farnborough and will control the Army Co-operation Squadrons. It includes Nos. 4, 16, 13, and 2 Squadrons, also the schools of photography and balloon training. The stations are Farnborough, Old Sarum, and Larkhill.

No. 23 Group, at Spittlegate, will replace No. 3 Group, and will take over Digby, Sealand, Manston, and Flowerdown. The units are Nos. 1, 2 and 5 Flying Training Schools, the Armament and Gunnery School, the Central Flying School, and the School of Technical Training at Manston.

Air Vice-Marshal T. I. Webb-Bowen commands the Inland Area, and administers directly the Air Ministry Wireless Section, the R.A.F. Officers' Hospital, and the R.A.F. Central Band.

The Officers commanding the new groups are Group Captain P. L. W. Herbert, No. 21; Air Commodore D. L. G. Pitcher, No. 22; and Air Commodore I. M. Bonham Carter, No. 23.

R.A.F. SPORTS AND PASTIMES.

Association Football.

Flowerdown v. *Eastchurch*:—The final for the R.A.F. Senior Cup was played at Uxbridge on Apr. 14 between the Electrical and Wireless School, Flowerdown, and the Armament and Gunnery School, Eastchurch. It resulted in a win for Flowerdown by 3 goals to 1. A large crowd of supporters came from each of the stations and kept up a continual roar of encouragement and advice. Flowerdown was much stronger in the actual numbers of its supporters but Eastchurch was better organised and had a more efficient equipment of raucous instruments.

Eastchurch started well and showed better combination than Flowerdown but they were well held by the dashing attacks of the Flowerdown forwards. The Flowerdown attacks broke down in front of the goal owing to the good defence of the Eastchurch backs and goalkeeper. Steady play and good team work led up to the first goal which was scored by Eastchurch. Flowerdown replied with a goal almost before the Eastchurch supporters had subsided into their seats and recovered their caps. Flowerdown scored again just before half-time after some hustling if not very scientific football.

The second half was slower and there were a good many free kicks awarded. By the way, why are all penalties at Soccer received with noises indicative of horror and disgust by the spectators, while at Rugger infringements of the rules are understood to be accidental?

Early in the second half a Flowerdown man was injured defending his goal and they played one man short for the rest of the game. Eastchurch were awarded a free kick right in front of the Flowerdown goal but the goalkeeper managed to clear a hard shot. Flowerdown scored another goal in the last five minutes, but it was disallowed. The terms were:—

FLOWERDOWN.—AC. D. McMillan; Cpl. McGuinness, L-AC. C. Willmore; Sjt. Lockhart, Cpl. D. Allen, Cpl. F. Bulmer; L-AC. W. Cannifford, L-AC. Collinson, AC. C. Parish, AC. C. Chatt and AC. A. Nesbit.

EASTCHURCH.—L-AC. E. H. Brittain; Sjt. N. E. Wood, L-AC. D. Gavin; L-AC. T. W. Dixon, AC. G. McIntosh, V.C., L-AC. A. Bristowe; F-S. A. J. Shimmons, L-AC. R. A. Attwood, L-AC. P. Hutchinson, Sjt. G. F. Giles and L-AC. D. G. White.

Digby v. *Calshot*:—The final for the R.A.F. Junior Cup was played on Apr. 10, and resulted in a win for Digby by 2 goals to nil, after half-an-hour's extra play.

Inter-Services' Boxing.

The Imperial Services' Boxing Association held their annual Championship Meeting in Maida Hall, Aldershot, on Apr. 15 and 16. This was the first time in the history of the contest that it was boxed entirely under amateur rules. The results of the two days' boxing were:—

OFFICERS.

Feather-weight.—Semi-final Round: Lt. W. Byas (Army) beat Sub-Lt. F. D. Howie (Navy) on points. Bye: Flt. Lt. G. V. Howard (R.A.F.). Final Round: Byas beat Howard on points.

Light-weight.—Semi-final Round: Flt. Off. G. H. Loughman (R.A.F.) beat Midshipman N. S. Neall (R.N.) on points. Bye: Lt. J. W. E. R. Gainher (Army). Final Round: Gainher beat Loughman on points.

Welter-weight.—Semi-final Round: Flg. Off. I. O. B. McGregor (R.A.F.) beat Lt. C. G. Christian (Army) on points. Bye: Midshipman T. A. Pack-Beresford (R.N.). Final Round: McGregor beat Pack-Beresford on points.

Middle-weight.—Semi-final Round: Lt. H. G. Hopper (R.N.) beat Lt. J. E. Marsh (Army) on points. Bye: Flg. Off. E. C. Whinney (R.A.F.). Final Round: Hopper beat Whinney on points.

Light Heavy-weight.—Semi-final Round: Sub-Lt. J. P. W. Furse (R.N.) beat Flt. Off. G. H. Walker (R.A.F.) on points. Bye: Lt. Courtis (Army). Final Round: Courtis beat Furse on points.

Heavy-weight.—Semi-final Round: Lt. C. S. Capper (Army) beat Flg. Off. P. G. Chichester (R.A.F.) on points. Bye: Lt. E. R. Baker (R.N.). Final Round: Capper beat Baker on points.

OTHER RANKS.

Fly-weight.—Semi-final Round: Cpl. Connell (Army) beat AC. F. Millington (R.A.F.) on points. Bye: Stoker Tull (R.N.). Final Round: Connell beat Tull on points.

Bantam-weight.—Semi-final Round: Cpl. Aguzzi (Army) beat A. Fisher (R.N.) in the second round. Bye: AC.1. J. Black (R.A.F.). Final Round: Aguzzi beat Black on points.

Feather-weight.—Semi-final Round: Sjt. Beal (Army) beat L-AC. Boteler (R.A.F.) on points. Bye: Signaller Shons (R.N.). Final Round: Beal beat Shons, the referee stopping the fight in the first round.

Light-weight.—Semi-final Round: L/Cpl. Jones (Army) walked over Plumber Miles (R.N.) failing to make the weight. Bye: F-S. J. Stone (R.A.F.). Final Round: Jones beat Stone on points.

Welter-weight.—Semi-final Round: AC.1. W. Page (R.A.F.) beat L/Seaman Turner (Navy) on points. Bye: Cpl. Watts (Army). Final Round: Watts beat Page on points.

Middle-weight.—Semi-final Round: Sjt. Crawley (Army) beat L-AC. W. House (R.A.F.) on points. Bye: A.B. Swan (R.N.). Final Round: Crawley w.o.

Light Heavy-weight.—Semi-final Round: Guardsman Harrison (Army) beat Marine Walker (R.N.), who was disqualified in the third round. Bye: AC.1. Williams (R.A.F.). Final Round: Harrison beat Williams in second round.

Heavy-Weight.—Semi-final Round: Marine Smith (R.N.) beat A.C. Watts (R.A.F.), who was disqualified in the first round. Bye: Guardsman Young (Army). Final Round: Young beat Smith on points.

The W.R.A.F. Re-union Dinner.

The Women's Royal Air Force held their 3rd Annual Re-Union Dinner at the Victoria Mansions Restaurant on Apr. 17. Dame Helen Gwynne-Vaughan, Commandant of the W.R.A.F. and President of the Old Comrades' Association, was in the Chair. The guests included Air Vice-Marshal Sir Philip Game, K.C.B., D.S.O., Air Member for Personnel, Air Vice-Marshal D. Munro, C.B., C.I.E., M.B., Commanding the R.A.F. Medical Branch, Brig-Gen. More, C.M.G., C.B.E., of the United Services' Benevolent Fund, Sq. Ldr. W. D. Budgen, R.A.F. Records. and Miss Harvey, of the Ex-Service Women's Club.

After the toast of the King, Miss W. E. S. Mount-Batten, M.M. M.B.E., proposed the "Guests." Replying, General More said that in such a large assembly of women it was manifestly unfair that the few men should have to speak. The Old Comrades' Association had been of the utmost service to the United Services' Fund. He was not surprised that the Association was flourishing with such an able and popular President.

The President then read a letter of apology from Lieut.-Cdr. Perrin (R.A.F. Memorial Fund), who had been called away on business connected with the Flying Clubs.

Air Vice-Marshal Munro said that he felt rather a fraud because he had served for such a short while with the W.R.A.F. He felt rather disconcerted on being called upon to speak, but not so much as on a previous occasion when the Chairman was asked whether he would rather have the Air Vice-Marshal or an Entertainer, and he replied "the Entertainer." The General Medical Council had asked permission to look at the W.R.A.F. records. (Laughter.) Not their conduct records. He did not know why. The Air Council had given their permission He was very glad to see such an enthusiastic gathering present and he felt sure that if a call should ever come for them the W.R.A.F. would muster in their thousands and those who were their guests would be their comrades again.

The President then read a telegram from Air Marshal Sir John Salmond saying that he was sorry he was unable to be with the W.R.A.F. and he had recollections of his work with them on the Rhine.

Proposing "The Air," Dame Helen said that this was the toast of the evening. Without belittling the land or the sea the air extended over both and had a wider vision and a greater rapidity of movement. She said that Apr. 16 was the date of the first co-operation between the R.F.C. and the R.N.A.S. which finally led to the R.A.F.

Sir Philip Game, replying, said that in thirty years he had come up against many odd jobs, but he had never before addressed an assembly of ladies. With regard to the R.A.F., in spite of, or probably because of, criticism in the Press, the R.A.F. was going very strong. It was being brought up rather on the progressive feeding of infants system. First it had the very light diet of the Somaliland campaign, where 8 aeroplanes and 800 of the Camel Corps had put an end to the activities of the Mad Mullah. The R.A.F. next took a hand in the third Afghan War on the N.W. Frontier There had been certain difficulties there. On one occasion he had been asked to send aeroplanes to bomb an Afghan warrior in a village of unknown name on the Frontier. Finally the R.A.F. had been given a square meal—to take over the safety of Iraq This had been done since 1922 with complete success. (Cheers.)

These side-shows had been carried on without the help of the women, but on the first day of the next war the R.A.F. would want their help. The call would be loud and insistent and he was sure it would be answered. (Cheers.)

Proposing the health of the "Old Comrades' Association," he said that it was keeping the old spirit alive and he wished it every success and prosperity.

Replying, Miss E. H. M. Foster (Sub-Ldr. Clerk, Cologne) indulged in a few Service reminiscences and described her life in the W.R.A.F. as a purple patch in a mis-spent youth.

Mrs. Powell, O.B.E., proposed "Our Comrades Overseas," and Miss F. Day (Chief Section Leader), who has settled in Australia, replied.

The toast of "Our Commandant and President" was received with musical honours and loud and prolonged cheering.—C. M. MCA.

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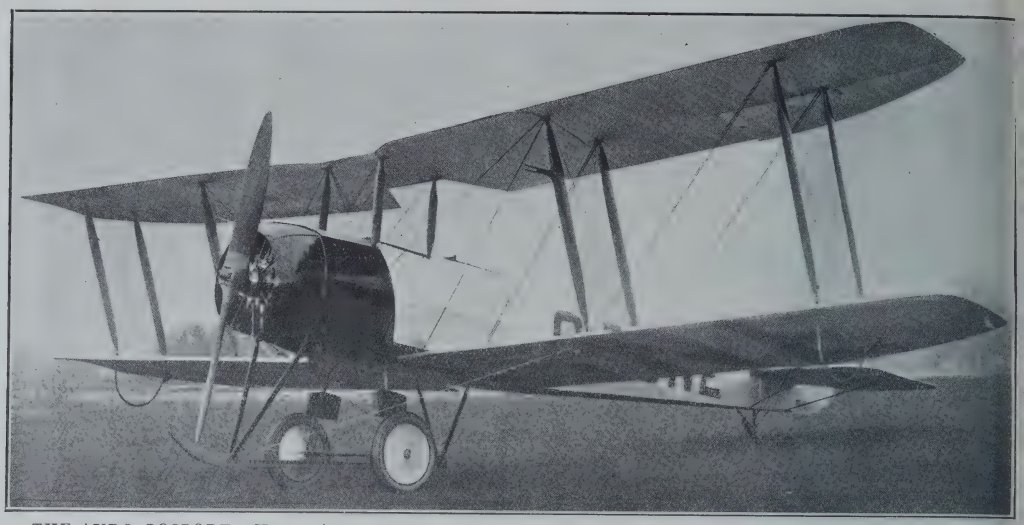


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THE AVRO GOSPORT TRAINING MACHINE.



THE AVRO GOSPORT.—Here seen with a 100 h.p. Monosoupape Gnôme. With the new Avro engine it should have a much higher performance, as the engine will give more power for less weight than the Gnôme.

For a period now extending over many years the Avro in one of the many 504 types has held a position of practical supremacy as a training aeroplane—not only in this country but in many others. Its value as a school machine in the first place arose from a happy combination of qualities inherent in the original design. It was a simple, straightforward, easily produced structure; had an adequate performance for training even to the advanced stage. It was controllable, but not unduly sensitive, easy to fly, but not too easy to fly perfectly, possessed a number of the little tricks of the type which are invariably found in any particular design of aeroplane, but none of these was developed to a vicious or even a dangerous extent. These qualities have been maintained through the whole series of variants of the original type, and at the same time the reliability, efficiency and robustness of the machine have been steadily improved.

Of recent years very determined efforts have been made to develop types of training machines of marked lower power than have up to the present been employed normally, with the object of reducing the cost of training in so far as it is affected by the cost of both the machines and of their operation. There are obvious difficulties in the way of achieving such an end. Undue reduction in the weight and size of an aeroplane tends to render the machine more fragile—for despite the maintenance of adequate strength for flying purposes, the light machine must tend to be more sensitive to rough handling, bad landing, or similar purely mechanical ill-usage. Undue reduction in power must tend to render the machine less safe in the air in obvious ways.

In the considered opinion of A. V. Roe and Co. Ltd. their own 504 type, although it is by no means a "light aeroplane" in the accepted sense, is actually of as low a power and as light in weight as is compatible with the requirements of satisfactory training for serious flying. They do not suggest that the standard 504K represents ultimate perfection in this respect—they have on the contrary just produced the 504R—to be known by the very appropriate type name Gosport—to meet present-day needs, and they hold that this machine is the nearest approach to the ideal training machine yet produced.

In general design and main dimensions the Gosport differs little from its predecessors of the 504 series. The structure is of precisely similar type to that hitherto used, and has been appreciably lightened in detail without sacrifice of either strength or the essential robustness of the earlier type.

The Gosport retains the well-tried Avro centre skid undercarriage—which has proved to be so effective in preventing the machine turning over as the result of a bad-landing, and has the usual very complete dual control arrangements fitted to the earlier training Avros.

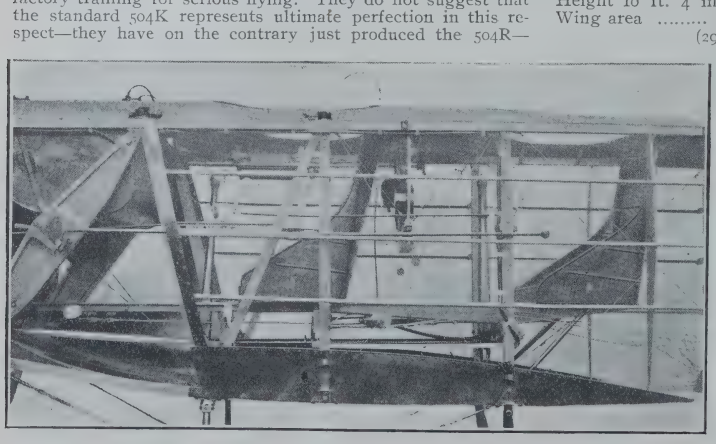
The upper wings are fitted with a cut-down centre section which gives both occupants a greatly improved view upwards—a very important matter at a busy flying school, and the ailerons are of the improved type with tapered tips—which experience has proved both to lighten to the lateral control and to bring it into better balance with the fore and aft and directional control.

The engine fitted is the 100 h.p. Monosoupape Gnôme type which has long been recognised as eminently satisfactory for school purposes—fitted with the latest improvements including "Y" alloy pistons which do not require the obturator rings essential to the original type of piston. These rings incidentally were of a fragile nature and led to much trouble in the hands of any but the most experienced of engine mechanics.

SPECIFICATION.

Span 36 ft. (10.97 m.)	Structure weight 733 l
Length 28 ft. 11 in. (8.83 m.)	(322 k
Height 10 ft. 4 in. (3.14 m.)	Power plant weight
Wing area 320 sq. ft.	374 lbs. (170 k
(29.7 sq. m.)	

Weight empty 1,107 lbs.
(491 kg.)
Weight loaded 1,676 lbs.
(760 kg.)
Engine Mono Gnôme
100 h.p.
Wing loading 5.2 lbs./sq. ft.
(25.6 kg./sq. m.)
Power loading (108 b.h.p.)
15.5 lbs./h.p. (7.0 kg./h.p.)
Fuel capacity 20 galls. (90 l.)
Max. speed 87.5 m.p.h.
(141 km./h.)
Minimum 35 m.p.h.
(57 km./h.)
Climb to 5,000 ft. (1,525 m.)
9.0 mins
Service ceiling 13,000 ft.
(4,000 m.)



General view of the cockpit of t Gosport.

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THE FLYING CLUBS.

The London Aeroplane Club.

For the week ending Apr 18 we had only three days' flying and the total time was 11 hrs. 5 mins.

On Wednesday, 14th, W. Hay successfully completed the tests for his Aviator's Certificate.

The following members received flying instruction:—Sir John Rhodes, G. Black, A. Lees, W. Barros, A. Southgate, Miss O'Brien, S. O. Bradshaw, G. Wallcousins, E. D. Moss, J. A. Simson, R. P. Cooper, E. K. Blyth, A. R. Ogston, S. F Adams, K. V. Wright, B. B. Tucker.

The following members made solo flights. W. Hay, Sq. Ldr. M. E. A. Wright, G. H. Craig.

Mrs. Eliott-Lynn, on her D H. Moth did 20 hrs. 25 mins. during the week ending Apr. 14, and Mr. D A. Kittel on his Moth, 4 hrs. 5 mins.

Mrs. Eliott-Lynn has passed the Cross-Country and Navigation Course required for a "B" Licence.

The Duke of Sutherland, Vice-President of the Royal Aero Club, has presented a D.H. Moth to the London Aeroplane Club. The delivery of the machine is promised for the middle of May.

The Moth to replace G-EBLU, which was written off in January last, is to be handed over this week and the additional Moth which has been purchased from the subscriptions collected from Members is due for delivery the following week.

The Lancashire Aero Club.

The Lancashire Aero Club has had a momentous week, despite the fact that owing to bad weather the total regular flying was only 20 hrs. 5 mins. and only sixteen members turned out for instruction.

A Presentation.

An interesting function took place at the aerodrome on Friday last when Sir William Letts, Managing Director of A. V. Roe and Co. Ltd. presented on behalf of the directors of that Company an Avro Gosport to the Lancashire Aero Club. The presentation was the fulfilment of a promise made by Sir William for A. V. Roe and Co. at the luncheon given by the Lancashire Aero Club to Sir Samuel Hoare in November last.

Owing to the unavoidable absence of the President (and, incidentally, the first donor of a light aeroplane to any club), Sir Charles Wakefield, Mr. John Leeming accepted the machine on behalf of the Club. The Lancashire Aero Club are therefore the possessors of the first Avro Gosport.

And it is only fitting that this honour should belong to Lancashire as Mr. A. V. Roe, the founder of the firm, is a Lancashire man, and the machine was built in Lancashire. Among those present at the presentation was Air Vice-Marshal Sir Geoffrey Salmond.

Sir William Letts, making the presentation, said:—

"I have very much pleasure on behalf of the Directors of A. V. Roe and Co. Limited in giving to you our latest production, the Avro Gosport aeroplane, and in doing so I think it is fitting that the Lancashire Aero Club should be the first to possess a machine of this type.

"I am also greatly pleased that the Club is to enjoy the use of our aerodrome here at Woodford. I welcome your members and hope that the use you make of the facilities we are happy to afford you will lead to the training of many pilots—not for the purposes of war, but for peace and the progress of science and the human race. Civil aviation is advancing and will continue to advance by leaps and bounds and nothing will do more to promote sustain its advance than the efforts of flying clubs like yours.

"The Lancashire Aero Club deserves the greatest measure support. It is doing very fine work and now that it is equip as well as, if not better than, any other Aero Club in the coun I am sure we can look for very great progress.

"I regret very much that your President, my friend Sir Cha Wakefield, has been unavoidably prevented from being present I ask you as Chairman of the Lancashire Aero Club to ac this aeroplane from the Directors of my Company. I am s you will all be proud of it. It is a Lancashire machine, desig by a Lancashire man, built in a Lancashire works for a Lancash Club.

"The Lancashire Aero Club and Manchester are honoured to by the presence of Air Vice-Marshal Sir Geoffrey Salmond, w I believe, first conceived the idea of the formation of Flying Clu

"I, personally, very much appreciate his presence here and have very much pleasure in asking him to say a few words to u

The aeroplane was accepted by the Chairman of the Lancashire A Club, Mr. John Leeming.

Mr. John Leeming expressed the thanks of the Club and poin out that since September last over 60,000 miles had been flown members, 70 of them had received instruction and 20 had flown so All these people were looking ahead and he expressed the opin that in the future the Club would bring out a number of priv owners.

Air Vice-Marshal Sir Geoffrey Salmond said he was proud to witn the presentation to the Club of what was one of the best train machines in the World. He was very gratified to hear what g work the Lancashire Aero Club was doing He thought that in t the light aeroplane clubs would run inter-club competitions and was sure that as a result of the activities of these clubs the Nat would acquire a sense of flying. Only those who flew realised glory of flying and the exhilarating sense of freedom and the se of power it gave. They all owed a deep debt of gratitude to peo like Sir William Letts and Sir Charles Wakefield because the succ of these light aeroplane clubs could result only in a more gene appreciation of the sense of flying and of all that flying meant.

After the presentation Mr. Bert Hinkler gave a demonstration flying on the Gosport.

The First Public Meeting.

On Sunday, Apr. 18, the First Aviation Meeting organised by Lancashire Aero Club, the first meeting, in fact, which has e been organised by any Flying Club, was held at Woodford, the ae drome which is the Club's by grace of A. V. Roe and Co., Ltd. was an enormous success and some 15,000 people attended, thou others say that 25,000 were present.

The weather was perfect during the afternoon, in spite of a threat ing morning, and a splendid programme had been arranged. T crowd exceeded even the most sanguine hopes. The motor tra was so congested that in getting away from the ground it brou to mind the annual efforts for extraction from the R.A.F. Displ Motor-cars were parked thickly in all the adjoining fields. Ap from motor-cars, there were 'buses, charabancs, motor-cycles a cycles to add to the congestion.

There was a "bombing" display by a formation of de Havilla Moths (with A.D.C. Cirrus engines) and an aerial combat between t



A DISPLAY IN BEING.—A view of the Lancashire Aero Club's Meeting on Sunday, Apr. 18. The machines on the ground are the Club's de Havilland Moths (Cirrus engines), and (inset) in the sky is Mr. Bert Hinkler on the Avro Gosport which had been presented to the Club on Friday, Apr. 16, by Sir William Letts.



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Moths. Then Mr. T. Neville Stack, the able and popular chief instructor of the Club, gave a display also on a Moth.

An item of distinct interest was a special flying exhibition by Mr. Hubert Broad and Mr. Bert Hinkler. The interest in this was the greater because Lancashire had the first opportunity of seeing the two pilots who took part in the Schneider Trophy Contest at Baltimore last year. Mr. Broad flew a Moth and Mr. Hinkler flew the Gosport and as an exhibition of pretty flying it was one of the best things which has yet been seen in this country.

The meeting concluded with flights by members of the Club who have done their entire training with the Club. A number of de Havilland Moths carrying important passengers flew up from Stag Lane to assist the Club.

One congratulates the Lancashire Aero Club on being the first aviation body in the country really to do something to stimulate enthusiasm for Aviation while doing nothing savouring in any way of vulgarity or secrecy

One only hopes that this may be only the first of a series of such events, and that when each Club gives a display the others will endeavour to co-operate, by sending machines over to add to the display—thus increasing public interest and stirring up friendly rivalry.

Once more Lancashire has done good work for British Aviation. Mr. John Leeming, and the Committee, and all those who helped in the organisation and the performance, whether as star pilots or as the Moorish victims of the bombers, deserve the thanks of the aeronautical community.

The Newcastle-upon-Tyne Aero Club.

During the week ending Sunday, Apr 18 very much colder weather conditions prevailed, and this no doubt accounts for the small amount of flying which has been done.

The total number of hours was 13.55, made up as follows :—Dual instruction with Major Packman 11 hrs. 10 mins. Solo flying 1 hr. Passenger flights 1 hr. 45 mins.

The following members flew under instruction :—Mrs. Marcks, Miss Leathart, Messrs. Middleton, Thirlwell, Leech, Irving, Twine, George, R. N. Thompson (secondary dual), C. Thompson, L. Smith, W. Todd, Grundy, Campbell, J. G. Edmundson, Bainbridge, Edwards, Harrison and Bruce.

Mr. R. N. Thompson and Mr. N. S Todd flew solo.

The following flew as passengers with Major Packman :—Lady Parsons, Miss Lundi, Mrs. J. G. Edmundson, Mr. Alderson and Mr. Carruthers.

Miss Dorothy Houlston, Miss Beryl Houlston and Mr. Farnsworth flew as passengers during the previous week and it is regretted that their names were omitted from the report for week ending Apr. 11.

An excellent exhibition of aerial steeple-chasing was given on Tuesday evening, though it is understood that it was not intentional, also that the H.T. cables were not being used for direction-finding purposes.

Quite a lot of flying has been done on the Gull during the week, the total being just under two hours, of which Mr. Heppell and Major Packman each did half-an-hour in single flights; Mr. Baxter Ellis and Mr. Thompson also flew for shorter periods. The troubles which have been experienced to date have been in connection with the petrol pressure system, on one occasion a small piece of foreign matter on the seating of the ball valve, and undercarriage. Owing to the rough nature of the aerodrome for an undercarriage of this type, quite a number of axles have been used, they having been bent usually while taking off. Perfect landings on this machine are quite a habit, the distance to pull up being exceedingly short. A height of 900 feet has been attained by Mr. Heppell and Major Packman.

The following notes are taken from the Club's Monthly Circular for March :—

Considering that only one machine was in operation throughout the month and one Instructor carried out the training, the amount of flying which took place during March was very satisfactory. The total number of flights was 164 and hours 79.25, of which 103 flights and 53 hrs. 40 mins. were dual instruction, 33 flights 17 hrs. 55 mins. solo, 25 flights totalling 7 hrs. 20 mins passenger flights and three test flights totalling 40 mins.

It is hoped that *Novocastria* will be on service early in April.

No instructional flying will take place on Mondays, when Major Packman will have his weekly holiday. Mr. Brown will be in charge of the aerodrome on these days and members holding "A" Licence may fly, provided they obtain the usual pass, signed by the Instructor from Mr. Brown.

The Gnosspelius Gull, which is jointly owned by Mr. Ellis, Mr. Heppell and Mr. Thompson, and is, as far as is known, the only really light aeroplane flying regularly at present, in this country, has proved a source of interest to all who visit the aerodrome and now that everything has been properly tuned up its flying qualities have surprised everyone. It is remarkable that such excellent results should be obtained in a machine driven only by a 5-6 h.p. Blackburne engine. It should be remembered that the design is three years old.

The Club is indebted to Mr. J. Bell for the splendid and varied collection of aeroplane pictures which decorate the Club rooms.

The Airship Club.

The Airship Club is now affiliated to the Royal Aero Club and the Royal Aero Club has granted permission for 3, Clifford Street, to be used as the Registered Address and for the purpose of Committee Meetings. Mr. H. E. Perrin is to be the Secretary.

The Committee of the Airship Club met on Thursday, Apr. 15.

The following Directors and Committee were appointed :—*Directors*—Griffith Brewer, Lord Cunliffe, Lieut.-Col. W. Lockwood Marsh, T Hon. A. F. de Moleyns, Commander F. L. M. Boothby. *Committe* Griffith Brewer, Lord Cunliffe, Lieut.-Col. W. Lockwood Mar The Hon. A. F. de Moleyns, Commander F. L. M. Boothby, R. Balston, R. L. Preston, Major C. C. Turner, Wing Commander A. Winter, The Hon Claud Brabazon.

The following pilots were selected for the Balloon entered by t Airship Club to compete in the Gordon Bennett Balloon Race Antwerp on May 30, 1926 :—Sq. Ldr. R. S. Booth, George F. Meag

A FAIREY-REED AIRSCREW TEST.

During the last ten days, the de Havilland Aircraft Co. Lt have carried out a test with a Fairey-Reed airscrew with mo gratifying results.

The airscrew in question was ordered by the Roy Australian Air Force for fitting to the D.H.50 seaplane pu chased by them, and by arrangement, this airscrew was test out on a standard D.H.9 aeroplane at Stag Lane prior to delivery.

Two consecutive tests were made, one with a standa wooden airscrew and the other with the Fairey-Reed a screw, both tests being made under exactly the same co ditions.

The following comparative tables prepared by the de Hav land Co. concern the climb and level speed of the D.H G-EBGT fitted with the two types of airscrews :—

CLIMB.

Aneroid Height in Feet.	TIME		TEMPERATURE DEGREES CENTIGRADE.	R.P.M.	
	Wood.	Metal.	Wood & Metal.	Wood.	Meta
	m. s.	m. s.			
+100 Ground Level			+12	1240	124
1000	0	0	9	1300	131
1500	1—01	0—54	8	1310	131
2000	1—56	1—43	6	1300	133
2500	2—56	2—42	4½	1300	132
3000	3—52	3—29	3	1300	131
3500	4 42	4—16	2	1300	—
4000	5 50	5—04	1	1300	—
4500	6—51	5—49	0	1300	132
5000	8—03	6—37	—½	1300	—
5500	9 - 44	7—26	—1	1300	132
6000	11—11	8—14	—2	1300	131
6500	12 - 35	9—15	—2½	1300	131
7000	13—37	10—24	—3	1300	132
7500	15 - 06	11—39	—4	1300	132
8000	16—44	13 - 32	—5	1300	131
8500	18 - 35	15—01	—5½	1310	132
9000	20 34	16—01	—6½	1310	132
9500	22—15	17—43	—7½	1300	131
10000	24—16	19 - 12	—9½	1300	—

LEVEL SPEEDS.

HEIGHT Standard feet.	TRUE SPEED. m.p.h.		R.P.M.	
	Wood.	Metal.	Wood.	Metal.
10200	95.0	93.5	1360	1360
6400	103	108	1400	1400
5000	105	108	1410	1410
3000	107	109	1410	1420
Ground Level	112	116	1450	1450

The D.H.9 during these tests weighed as follows :—

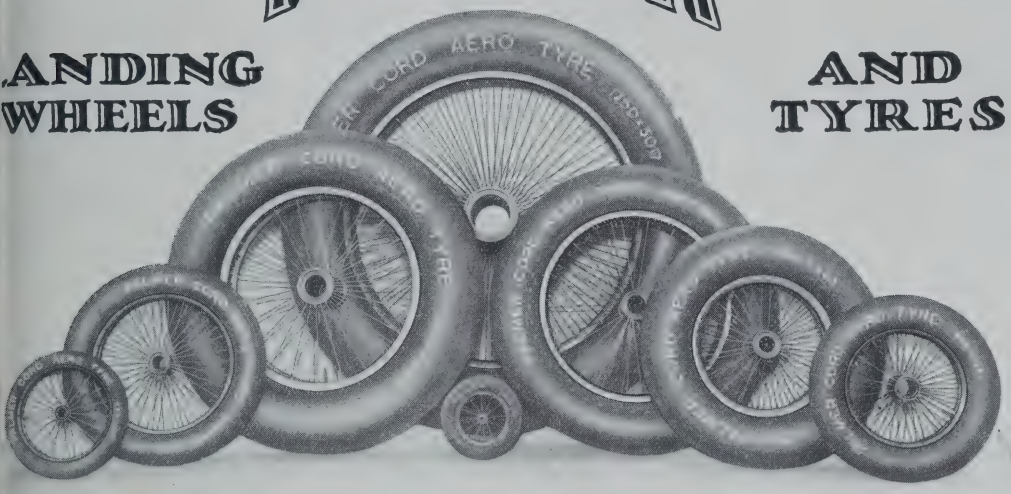
Weight, light	2,428 lbs.
Fuel and oil (full tanks)	660 lbs.
Pilot	140 lbs.
Observer	180 lbs.
Total	3,410 lbs.

Its absolute ceiling was, with wood airscrew, 16,100 ft., an with the Fairey-Reed airscrew, 18,300 ft.

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
00×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central

Tyre Size	Wheel No	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

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ND (346)

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 14; Tuesday, 13; Wednesday, 14; Thursday, 12; Friday, 11; Saturday, 17; Sunday, 8.

Imperial Airways Ltd.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 46, passengers 256, freight 11 tons.

Air Union:
Paris—London: Machines 31, passengers 166, freight 10½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 39, freight 1¼ tons.

Special: Nil.

Total number of trips by British Machines, 46, carrying 256 passengers. Foreign Machines, 43, carrying 203 passengers.

Comparative Figures:

Week ending Apr. 18:
Machines, 89; Passengers, 461; Crews, 116; Total personnel, 577.

Corrresponding week, 1925:
Machines, 102; Passengers, 419, Crews, 131; Total personnel, 550.

Corresponding week, 1924:
Machines, 39; Passengers, 163; Crews, 59; Total personnel, 222.

Corresponding week, 1923:
Machines, 96; Passengers, 366; Crews, 156; Total personnel, 522.

Corresponding week, 1922:
Machines, 75; Passengers, 211; Crews, 128; Total personnel, 339.

Corresponding week, 1921:
Machines, 53; Passengers, 179; Crews, 69; Total personnel, 248.

Corresponding week, 1920:
Machines, 36; Passengers, 32; Crews, 36; Total personnel, 68.

Croydon Notes.

The summer services started up on Monday, and it is now possible to reach 33 major Continental cities by direct air communication from London. It is hoped to give a complete list of these with times of arrival and departure and mode of flying, in an early issue.

On Wednesday of last week Mr. O. P. Jones made the last flight on a D.H.34. This is alleged to be the last occasion on which a single-engined machine will fly on the passenger routes, but one cannot help wondering whether the farewell performance of the D.H.34 will be as frequent as those of actor-managers, concert singers, Rugby footballers, and other popular persons. One will be very surprised if, during the rush of summer traffic, the D.H. 34s do not emerge from their well-earned retirement and once again carry many passengers at the hurry.

Mr. F. L. Barnard had a most alarming experience last Friday. He was flying from Paris on G-EBMR, one of the new W.10s, with 14 passengers, and when he was between Beauvais and Poix he ran into a thunderstorm. Suddenly a report like the firing of a 60-pounder went off in his ear and he saw a flash of lightning go down a few feet in front of the leading edge. Passengers in the cabin saw a branch of the main flash strike the machine and a large patch of fabric on the lower plane was burnt. The compass was put entirely out of action and one engine started missing, as apparently the permanent field of one of the magnetos had been upset.

Mr. Barnard was rather in a quandary as to what to do. He did not like to land immediately, thinking that the machine might have become highly charged with static electricity, and in landing might spark to earth and ignite the whole machine.

On the other hand he was afraid that the passengers in the cabin might have become alarmed. (Had one been one of the passengers one would have been absolutely petrified with fear.) However, in order to ease the situation Mr. Barnard began pointing out objects of interest on the ground to the inmates of the cabin, and eventually he reached Lympne in safety and without sparking to earth.

On examination it was found that in addition to the hole in the fabric one of the main spars was scorched and all the bonding was fused and one of the ailerons was damaged.

Mr. Barnard had not let out his aerial as he had found earlier in the day that atmospherics had been so bad that wireless speech was impossible. Had the aerial been out it is possible that it might have been struck and that the lightning might have been led up into the cabin with fatal results to the passengers and certainly to the pilot, who would have been wearing head 'phones. [On the other hand it might merely have blown up the wireless gadgets.—C. G. G.]

This certainly seems a case for much earnest research.

One would add that Mr. Herne is still in America.

A good flight was made by Mr. O. P. Jones on Sunday. A passenger wished to go to Nürnberg (Nuremberg) on business and return by evening. He left Croydon at 06.03 hrs. and arrived back at 21.32 hrs. He was held up for over an hour in Cologne while permission was obtained to fly on to Nuremberg. The total distance flown was 850 miles and the machine used was a D.H.50.

At A.D.C. Aircraft Ltd. Mr. Perry has been testing a Martinsyde-A.D.C.1 and a Martinsyde-Hispano. There is much activity in the sheds on various types of engines and machines.

Major Halford has recovered from his accident and h been lapping Brooklands on his racing car at 105 m.p which looks as though his smash on his Talbot when skidd at by a Buick has not affected his nerves much.—G. D.

BERKSHIRE WORK.

The Berkshire Aviation Tours did still more good work Doncaster during the week following the Easter Holida Including the holiday week-end itself, between Apr. 1 a Apr. 8, Mr. Parkinson took up 640 passengers in eight d and his colleague, Mr. Leleu, on the second machine, to up about an equal number of passengers. By the time t Doncaster visit ended on Apr. 9 Mr. Parkinson and Mr. Le between them had taken up 1,334 passengers in nine da and their visit included nearly three hours' photographic i ing on Easter Monday morning, during which period th might otherwise have acquired more passengers.

Their performance is all the more creditable because t field at Doncaster, though it had a good surface and w situated without any high trees in the immediate vicinity, w itself quite small, the space actually available for landi covering about nine acres.

Mr. Parkinson's particular Avro, which has now gone ba to the Works at Witney for overhaul, carried 7,500 passeng during 1925, and Mr. Parkinson carried another 2,500 passe gers during that year on the machine which he is using present.

MR COBHAM'S NEXT VENTURE.

It is understood that Mr. Cobham's flight to Australia w begin in about three weeks' time. He had hoped to get aw on Apr. 20, but it has been found impossible to get thin ready in time and the lesson "more haste less speed" h been taken to heart since November.

MADRID-MANILA.

On Apr. 18 Capt. Estevez and his mechanic, Senor Calv who had been missing since Apr. 11, were found by aircra of the R.A.F. and both were conveyed to hospital by aer ambulances.

It will be remembered that Capt. Estevez left Cairo on Ap 11 in company with two other Spanish aviators, all three Breguet XIX biplanes, en route for Manila, Philippi Islands. The other two arrived safely at Baghdad but Ca Estevez was reported missing.

R.A.F. aeroplanes were sent out over the desert to try a find the missing aviators, and on Apr. 13 the Breguet bipla was found intact about 100 miles from Amman. In t

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machine was a note stating that the occupants were making their way to Amman on foot.

It was not until Apr. 18 that Flg. Off. Coghill of No. 47 Squadron, R.A.F., found Capt. Estevez about 40 miles from his machine and his mechanic a further 25 miles distant from the place where Capt. Estevez was found.

Both men were suffering from exposure and footsoreness and were later conveyed by aeroplane to Amman hospital.

According to *The Times* of Apr. 20:—The gratitude of the Spanish nation for the rescue of Capt. Estevez, leader of the Madrid-Manila flight, and his mechanic, by the Royal Air Force, after their forced landing in the desert east of Amman, is finding expression in messages and telegrams from provincial councils and other bodies.

Many Spaniards of all classes are calling to leave cards at the British Embassy in Madrid and at the British Consulates at various ports. King Alfonso and the Marquis de Estella left cards at the British Embassy to-day, and the commanding officers of a number of regiments were also among the callers. Working-men, too, have called to express their admiration. Among the telegrams received is one from the officers and crew of the Argentine cruiser, *Buenos Aires*, now at Cadiz, which brought back Commandante Franco after his Transatlantic flight.

Senor Yanguas, the Foreign Minister, before delivering a lecture here on Saturday on foreign policy, expressed the gratitude of Spain for the heroic efforts of the British Air Service which had been crowned with success by the finding of Captain Estevez and his mechanic. Senor Yanguas added that the Marquis de Estella had said to him that it was in the air, where there are no frontiers, that nations will embrace each other in peace and fraternity.

In the meantime the remaining two officers were proceeding with their flight towards Manila.

On Apr. 13 Capts. Loriga and Gallarza left Baghdad and later arrived at Bushire, immediately leaving under favourable weather conditions for Bandar Abbas.

On Apr. 14 they flew from Bandar Abbas to Karachi, in a non-stop flight of eight hours.

On Apr. 16 they reached Agra from Karachi.

On Apr. 18 they arrived at Calcutta.

THE NORGE.

On Apr. 13 the Italian airship *Norge* left Pulham for Oslo at 23.45 hours with a crew of nineteen, commanded by Colonel I. N. G. Nobile.

On Apr. 14 she arrived at Oslo at 13.25 hours and was gassed and re-fuelled immediately on arrival.

On Apr. 15 she left Oslo for St. Petersberg (now vulgarised into Leningrad) at 01.10 hours and arrived at the old Gatchina aerodrome (now Bolshevised into Trotzk—presumably for the accommodation of globe-Trotskis) at 20.30 hours.

The *Norge* is not expected to leave St. Petersburg for Spitzbergen until Apr. 25.

COPENHAGEN—TOKYO.

Lieut. Botved of the Danish Army who is attempting to fly from Copenhagen to Tokyo on a Fokker C.V biplane (450 h.p. Lorraine-Dietrich engine) has been forced to land near Foochow while flying from Canton to Shanghai.

LONG RANGE WEATHER FORECASTING.

In view of the immense importance of meteorological information to flying in a country afflicted with so variable a climate as our own, any sign of an increased certainty in the accuracy of weather forecasting—even if it takes a form not directly important to aviation—is of interest.

The 50-day forecasts by Capt. Lord Dunboyne which are to be published by *The Daily Mail* are unlikely to be of any great immediate value to flying, but, if they prove to be reasonably accurate, they will prove that very considerable advances have been made in the discovery of the real causes of weather and so hold the promise of better accuracy in those shorter range but very detailed forecasts which are necessary for the purposes of flying.

These forecasts will be of added interest because Lord Dunboyne was during the war on the Staff of the Admiralty and the Royal Naval Air Service generally received from him very much extremely useful meteorological assistance.

BEARING ENDURANCE.

The radial air-cooled engine has recently given two e tremely convincing displays of its capacity to stand up long-continued hard work. No engine of this type can co tinue to operate for long with defective bearings, and bo the 25,000-mile sealed test of the Bristol Jupiter VI and t performance of Mr. Cobham's Jaguar engine on the flight the Cape and back, were undoubtedly highly successful tes of bearing material and design.

It is therefore interesting to record that in both these e gines the white-metal employed in the plain journal bearin was the well-known Number Eleven Alloy supplied by T Hoyt Metal Co. of Gt. Britain Ltd.

FOR DIE CASTING.

Light alloy castings, which are extensively used in t production of aero-engines, develop superior physic qualities if die-cast than if run into sand moulds. Dies a in general expensive, and are liable to deterioration as th are attacked by the molten metal, and some form of prote tive dressing for the dies is usually employed.

A material known as Bergolin has been produced by H. Bergholz, of Hamburg, and has been found very effective f this purpose. The Bergolin is mixed with water and the di previously heated, is sprayed or painted with the mixtur It is claimed that one such coating will suffice for two three hundred castings before it need be renewed.

Bergolin, incidentally, may be used not only for duralumi but also for tin, zinc, lead, brass, or white-metal castings.

PERSONAL NOTICES.

DEATHS.

LEATHERDALE.—On Apr. 17, near Jaliba, Iraq, as the result of flying accident, L-AC. F. E. Leatherdale, R.A.F.

MARSH.—On Apr. 7, at Wells, Somerset, of heart failure, Maj Frederick Charles Marsh, late 15th (The King's) Hussars and R.A.F in his 63rd year.

TOMES.—On Apr. 17, near Jaliba, Iraq, as the result of a flyi accident, James Eric Tomes, Flg. Off., No. 84 (Bombing) Sqdn., R.A.

Mr. Tomes entered the R.A.F. in March, 1923, and after a cou of instruction at No. 5 F.T.S., Shotwick, was posted in Februar 1924, to No. 11 (Bombing) Sqdn., Bircham Newton. He was post to No. 84 (Bombing) Sqdn. at Shaibah, and was promoted to t rank of Flg. Off. in December, 1924.

TWEEDIE.—On Apr. 17, at Amman, Transjordan, as the result a flying accident, Sq. Ldr. Harvey Alec Tweedie, O.B.E., A.F.C., on surviving son of Mrs Alec Tweedie, aged 37.

Sq. Ldr. Tweedie served with distinction in the R.A.F. during t War, 1914-18, and was awarded the A.F.C. in the New Year Honou List in January, 1919. In 1921 he was at No. 7 Group H.Q., Andov and in January, 1922, he was appointed to the British Delegation Paris, Air Section.

In August, 1922, he was posted to the Directorate of Operatio Department of the Chief of the Air Staff, Air Ministry. He w promoted to the rank of Sq. Ldr in January, 1923, and appointed command No. 2 Armoured Car Company, R.A.F., Sarafand, on Feb. of this year.

WALLAGE.—On Apr. 17, at Amman, Transjordan, Flt. Lt. Stanl Harry Wallage, M.C., R.A.F.

Flt. Lt. Wallage served with distinction during the War, 1914-18, a was awarded the M.C. in September, 1918, "for conspicuous gallant and devotion to duty during recent operations. He personal destroyed seven enemy machines. He showed a fine spirit of de and tenacity, and his skill and success as a fighting pilot was a fi example to others in his Squadron."—*London Gazette*, Sept. 10, 191

He was posted to the C.F.S. in June, 1921, and to No. 47 Sqd Middle East, in April, 1922. In July, 1922, he was transferred H.Q., R.A.F., Transjordan, where he was serving at the time of t accident.

BIRTHS.

BRACKLEY.—On Apr. 15, at 22, Down Street, Piccadilly, W., Frida, wife of Major H. G. Brackley, D.S.O., D.S.C.—a son.

PAGE.—On Apr. 12, to Ida (*née* Beynon), wife of Flg. Off. Jo Herbert Page, R.A.F., Digby, Lincolnshire—a son.

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THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 17.

The Editorial Offices of "The Aeroplane" are at 175. Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14. Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s. Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8$. U.S.A., 1 Year, $8 50c.

ON SOME NEW THINGS.

We people who hope some day to make a living, or to t some real sport, out of aviation remind one of that verse the 17th Chapter of the Acts of the Apostles which says For all the Athenians and strangers which were there ent their time in nothing else, but either to tell, or to hear me new thing." We have all been hammering away for long on what we consider to be more or less orthodox roplanes and we are getting so little forr'ader on them at we all seem to be hoping for some kind of elixir of life philosopher's stone which is going to revolutionise avia- n and make all our fortunes.

We are all rather tired of the wild-eyed woolly-haired in- ntor, because we saw so much of him just before and dur- g that recent tribal conflict which is generally dignified by e name of the Great War. But we still hope for some new ing. The result is that when a good-looking well-groomed dividual, quite unlike the old-time inventors, comes along ith a windmill on the end of a stick or a bird-like aeroplane ithout a tail and demonstrates that it really flies, all of us, cluding the Highest and the Mightiest Ones of the Air inistry, flock to see it, and hope that it means the revolu- on of aviation.

Conservatism and Liberality.

Quite a long time ago, during the aforesaid War, a friend one's early youth, who is now a distinguished naval en- neer, made one very angry by laying down as a basic prin- ple the fact that inventions very seldom revolutionise any- ing, and that the very great developments take place rough quiet and steady work by those whose job it is to lve certain definite problems. For in those days one be- ved in the Epoch-making Invention.

On the other hand, quite recently, a very brilliant young ficer of the R.A.F., in the course of a discussion on new ings, remarked that what we needed in aviation was to get vay from the Preconceived Idea.

Perhaps, like so many of those who were red-hot revolu- onaries in their youth, one is becoming an old fogey and tra Conservative. But one must confess that when one oks at auto-giros and tail-less aeroplanes one's natural im- ulse is to say, like the old lady from the country who went the Zoo and saw the giraffe for the first time, "George, don't believe it."

Probably the truth lies between the two extremes, and, ke most things in life, is a compromise. At any rate one very glad to see that the Great Great Ones, undeterred y the unfruitfulness of the many talents buried with the rennan Helicopter, are wrapping up a few more talents in ie Auto-Giro and the Hill Tail-less Aeroplanes. (*Vide* St. Matthew and St. Luke.)

One of the earliest of the lower deck ratings of the Royal Naval Air Service had a pleasing habit, when the Nation's wealth was dissipated in a devastated aeroplane, or was diverted in the expenditure of much petrol in not-too-strictly-Service automobiles, of saying "Well, the Navy's a big firm, Sir." And similarly the Air Ministry, despite our clamours for bigger Air Estimates, is a big enough firm to afford to spend some money on experiments which at any rate are interesting even if they are not going to revolutionise aviation.

The Sporting Chance

One has always claimed on behalf of THE AEROPLANE that even when it does not believe in any particular persons or any particular things it is at any rate always willing to give them a fair hearing and a sporting run for their money. Also whatever one's own personal opinions may be one is always ready to let other members of the staff of THE AEROPLANE express their own opinions.

Consequently those readers of the paper who may be perhaps wishful to hear more about practical Civil Aviation, or about the forthcoming war with Japan and Russia, or about the racial disputes of Shem and Japhet, must be lenient on this occasion while our Captain Sayers is permitted to discourse at length on the tail-less aeroplane, the merits of which were so well set forth last week by its producer, Captain G. T. R. Hill.

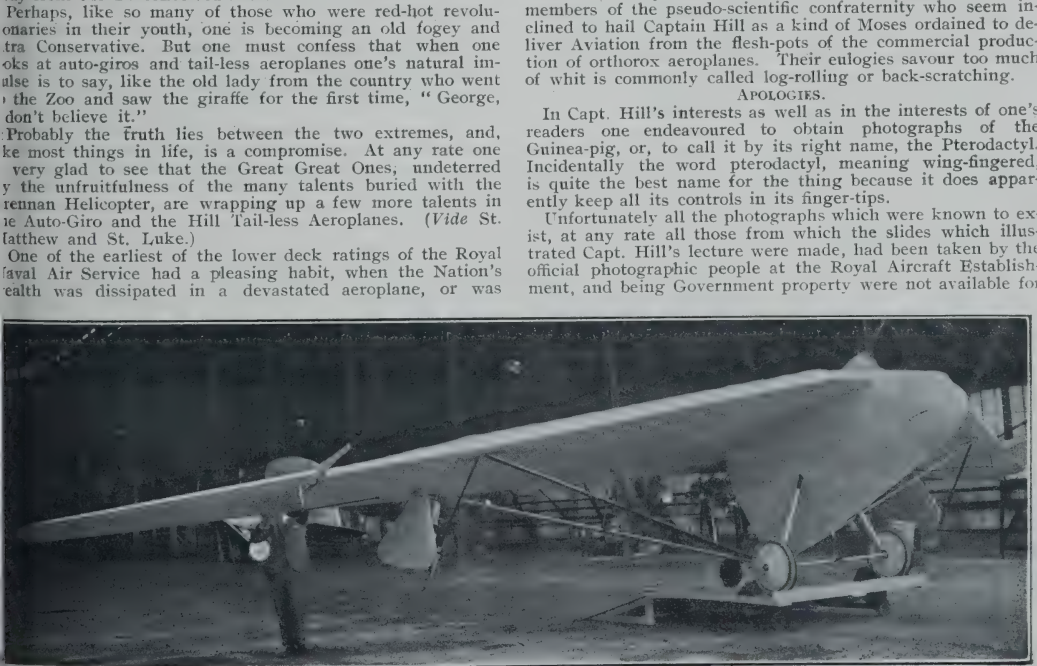
One refrains from calling Captain Hill its inventor. In the first place the word inventor carries a certain connotation of futility, and while one may not be as yet converted to a complete belief in Capt. Hill's flying guinea-pig one is prepared to vouch for the fact that he is anything but futile. He is a very able pilot, a competent engineer and quite an effective humorist. All of which comes about as near persuading one to a belief in his doctrines as St. Paul came to persuading Agrippa. And in the second place, as Captain Sayers has shown, Capt. Hill has not invented anything, but has skilfully adapted a variety of well-known ideas, all of which have been used before in one form or another.

Which is why one rather resents the attitude of certain members of the pseudo-scientific confraternity who seem inclined to hail Captain Hill as a kind of Moses ordained to deliver Aviation from the flesh-pots of the commercial production of orthorox aeroplanes. Their eulogies savour too much of whit is commonly called log-rolling or back-scratching.

Apologies.

In Capt. Hill's interests as well as in the interests of one's readers one endeavoured to obtain photographs of the Guinea-pig, or, to call it by its right name, the Pterodactyl. Incidentally the word pterodactyl, meaning wing-fingered, is quite the best name for the thing because it does apparently keep all its controls in its finger-tips.

Unfortunately all the photographs which were known to exist, at any rate all those from which the slides which illustrated Capt. Hill's lecture were made, had been taken by the official photographic people at the Royal Aircraft Establishment, and being Government property were not available for



SOMETHING NEW.—Three-quarter front view of the Hill Tail-less Monoplane.

publication, at any rate not in The Aeroplane, though one would not be at all surprised to see them in other papers which have not had the impertinence to criticise our expensive Government Establishment. But happily feminine curiosity and pertinacity succeeded where the Interests of Science failed, and readers may now feast their eyes on this new thing.

Added to the photographs are certain illustrations made from diagrammatic drawings which our Mr. Leonard Bridgman has done under the scientific eye of Capt. Sayers. If they are too scientific for the average reader one can only express one's regrets and assure him that it is not the fault of the staff of The Aeroplane. The sketches were made from memory, and a scientific memory at that.

In the meantime one commends this dissertation on a new thing to the more seriously-minded readers of this paper, and would especially direct their attention to the conclusion at which Capt. Sayers arrives in his last paragraph, namely th it ought to be possible to build an aeroplane of quite norm appearance which at the same time has the characteristi so far as its controls are concerned, of Capt. Hill's tail-l machine.

Much in the same way one believes that, though the Au Giro may be quite a success in fulfilling all the claims th are made for it, with a proper development of the Handl Page slot idea, coupled perhaps with the style of cont which Capt. Hill uses in his tail-less machine, it should possible to make an aeroplane which looks like an aeropla and will still get off the ground in just as short a run as t Auto-Giro and will sit down just as gently at a dead sta still.

That is to say one believes that all that is claimed for the new things may be achieved equally well by adhering close but not too closely, to the Preconceived Idea.—C. G. G.

TAIL-LESS AEROPLANES, ANCIENT AND MODERN.

By Capt. W. H. Sayers.

The information which is now available concerning Capt. Hill's tail-less aeroplane, the Guinea Pig or Pterodactyl, has very naturally reminded many persons of the early Weiss, Dunne, and other tail-less aeroplanes and the question has been asked :—How does Capt. Hill's design differ in essentials from those of these earlier pioneers, and what results have been attained which allowing for the improved methods of construction and so forth now available could not have been achieved with the aerodynamic knowledge or instincts possessed by Mr. Weiss and Capt. Dunne?

This question is one that admits of no very simple answer. To a very large extent it is fair to say that in many respects the essential features of Capt. Hill's design do not differ from those embodied in the Weiss and Dunne types. What may be regarded as the real difference lies in the ends which Capt. Hill has sought to attain. Although his methods are in many respects the same, the object in view in his case are somewhat different from those sought by Weiss and Dunne.

Briefly the early designers of tail-less aeroplanes—and indeed of all aeroplanes, tailed or otherwise, using swept-back and "washed out" wings—were mainly concerned with the desire to produce a stable aeroplane. Capt. Hill's main object was to produce primarily an aeroplane which should be completely controllable, and—almost as a secondary consideration—not unstable.

In both cases the real aim was to produce a safe aeroplane. The difference between Capt. Hill and his predecessors may be quite accurately be said to be the result rather of extended practical experience in the design, construction, and operation of aeroplanes than of new theories.

Safety and Under-Powered Aeroplanes.

When the Weiss and Dunne aeroplanes were designed and built, aeroplanes at best only just flew. Their top speed was a little above the stall, in other words they had practically no speed range, and flying without disaster upon them was essentially a problem of keeping them as nearly as possible at the fixed angle of incidence corresponding to their normal flying speed, and in particular in preventing this angle from being noticeably increased, which meant stalling.

Having no speed range, the pilot had no need for the ability to fly at finer angles than one just separated from stalling by a small margin. Having no reserve of power, rapid manœuvres could not be executed without the certainty of stalling, and consequently controls powerful enough to induce rapid manœuvres were not only unnecessary but a definite source of danger.

Therefore the natural method for securing safety in flight at this period seemed to be the production of a stable aeroplane—that is to say a machine which would not only tend if left to itself to maintain its one safe angle and speed, but which would strenuously resist any misguided effort on the part of the pilot seriously to alter that angle. In other words it appeared that a safe aeroplane should be stiffly stable, a provided with the minimum of necessary control.

There is very little doubt that this objective was ve closely achieved by both Weiss and Dunne, and in many spects their machines were safe.

The Effect of Reserve Power.

But while these pioneers of safety in flight were developi the stable aeroplane, others were at work producing ligh and more efficient aeroplanes, and lighter and more power engines. By the time the problem of producing the stal "tail-less" aeroplane had been practically solved, the norm non-stable aeroplane possessed a noticeable speed range, a a reserve of power adequate for almost "acrobatic manœuvres. This meant that instead of having practica one safe angle and speed—just a little removed from t stall—the newer machines were able to fly safely over a ran of angles, with the fixed angle of the earlier types as or one end to the range.

To make use of this range—which was essential both f performance and manœuvring—the pilot required a power control which was in effect denied him in the "stable type.

Since the beginning of this state of affairs, continuo efforts have been made to combine a limited degree of stabili with a power of control sufficient to allow the pilot to u the full range of performance and manœuvrability possib with the power reserve actually available. These efforts ha been successful to a limited extent. Unfortunately with a reasonably powered aeroplane control power sufficient make full use of the manœuvring power actually available invariably also sufficient to stall the machine if it is ind creetly used.

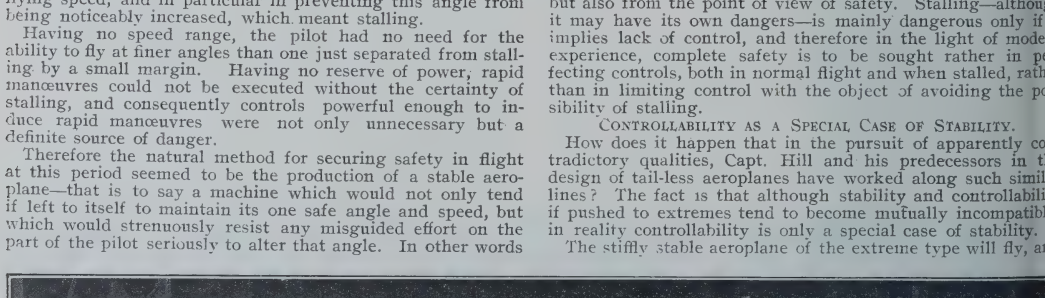
And if the aeroplane is stalled, the normal type of contro cease to perform their normal functions, and the machine out of control and becomes extremely dangerous.

The most complete control possible is desirable not on on account of the increased performance and manœuvrabilit but also from the point of view of safety. Stalling—althou it may have its own dangers—is mainly dangerous only if implies lack of control, and therefore in the light of mode experience, complete safety is to be sought rather in pe fecting controls, both in normal flight and when stalled, rath than in limiting control with the object of avoiding the po sibility of stalling.

Controllability as a Special Case of Stability.

How does it happen that in the pursuit of apparently co tradictory qualities, Capt. Hill and his predecessors in t design of tail-less aeroplanes have worked along such simil lines? The fact is that although stability and controllabili if pushed to extremes tend to become mutually incompatibl in reality controllability is only a special case of stability.

The stiffly stable aeroplane of the extreme type will fly, a



VERY LIKE A WEISS.—Front view of the Hill Tail-less Monoplane (Bristol Cherub engine), which in this aspect looks very like the Weiss Gliders of 1908-09.

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will only fly at one fixed angle of incidence. It resists any disturbance—however produced—which tends to change that angle. No aeroplane has ever been produced which completely fulfils this description, but the Dunne certainly approached fairly closely to it.

The completely controllable aeroplane is one which will assume any attitude or angle of attack at the will of the pilot, and will remain in that attitude, until the pilot wishes it to change. The second requirement is really as important as the first. It is no use giving the pilot power to change his attitude from that of flight level at high speed to that of most rapid climb if he has not also power to keep the machine steadily at the latter angle for as long as may be necessary.

Complete Controllability.

It is possible to produce a machine such that the pilot can maintain any desired attitude with fair constancy by a process of continuous readjustment of his controls. Such a machine could be called controllable, but it could scarcely be considered to be as well controlled as a machine in which the controls could be set once and for all at the correct position, and the machine would thereafter without further attention from the pilot, steadily maintain the required attitude of flight.

To achieve this end however the machine must be stable, in that at each position of the control it will tend to take up one and only one attitude, and resist on its own account any disturbance of that attitude which was not caused by a re-adjustment of the controls.

The early attempts to produce a stable machine then were directed towards producing a machine stable only at one angle of incidence, or perhaps, more accurately, stable over a very small range of angle under the influence of very limited control powers.

The ideal controllable aeroplane is one which can be made to be stable at any attitude of flight by appropriate movement of the controls, and in which there is only one possible attitude of stable flight for any one control position.

The Failure of the Normal Aeroplane.

The normal aeroplane of to-day fails to meet these requirements essentially because there is more than one possible attitude of flight for certain control positions. If the aeroplane is in normal flight, and the control stick is moved to the left, the machine banks to the left, begins to side-slip to the left, and, if it has normal fin and rudder surfaces, to turn to the left, and in general will settle down to a more or less steady turn to the left. If the aeroplane is stalled however and the stick is moved in the same way, the normal aeroplane may begin to bank in the same direction, but this effect will very rapidly be overcome by the development of a turn towards the right, which will cause the left wing to drop instead of rising, and eventually the aeroplane will settle down to a steady spin rotating about an axis entirely different from the axis about which it rotated in the first case

Why does the machine behave in this disconcerting and extremely dangerous manner when stalled? It may be said briefly that the real reason is that when the wings of the aeroplane are stalled, the control surfaces—at least, the elevator and the ailerons—are also either stalled, or are so nearly stalled that they become so when they have moved through a very small angle. And the reason why they s more or less concurrently with the wings is that they actually part of the supporting system of the machine as as being control surfaces.

The Stationary C.P. an Essential.

For the aeroplane to remain in steady flight it is esser that the weight of the machine should act in the same as the total resultant of the vertical air forces on the wi aeroplane. In other words, the centre of pressure for whole machine must lie in the same vertical line as the centre of gravity.

If one takes the ordinary type of cambered wing, it easily be found by experiment that its Centre of Press (C.P.) has a definite position for each angle of incidence. W a particular wing, for instance, at 4° incidence the C.P. may at one-third of the chord back from the leading edge. If t wing is attached to an aeroplane so that the Centre of Gra (C.G.) of the whole machine is on the chord of the wing third of the chord from the leading edge, then that wing itself without any assistance from tail surfaces will be equilibrium when flying at 4° incidence.

Suppose, however, that the wing is disturbed by a gust otherwise and the incidence changes from 4° to a gre angle—say 6°. The centre of pressure will move forw from the original position, and the lift will now act ah of the C.G., which will make the machine tend still furt to increase its incidence. If the effect of the disturbance i decrease the incidence, the C.P. will move in the oppo direction and the wing will tend still further to decrease incidence.

The tail and control surfaces in such a case must prov forces and moments which are opposite to those produ by the movement of C.P. to keep the machine in balance.

The Work of the Tail.

Suppose that it is desired to fly this machine at its slow possible speed—that is, at the maximum angle of incide below the stall. The C.P. at this incidence will be in extreme forward position and well ahead of the C.G. consequently the wing lift produces a big moment tend to increase the incidence still further and consequently stall the machine. To overcome this the tail must prov a moment of equal amount in the opposite direction—in ot words, the tail must develop a big lift, and must theref have quite a large angle of incidence.

If the machine is required to fly at a finer angle incidence, the C.P. of the wing must be behind the C.G., to balance this the tail must provide a down load—or negat lift. Thus to fly at large angles of incidence on a nor wing the tail must provide a large lift and itself be at a la angle. Thus the nearer the stall the wings, the nearer must be the tail plane. This load is a load required to br the aeroplane into equilibrium, and is not a force wh serves to manœuvre the machine.

If it is required to restore the angle of incidence from nearly stalled state to a finer one, a further up load will h to be applied to start the machine moving in the requi direction. This means still further increasing the lift the tail, and therefore increasing the incidence—or, in ot words, bringing the tail still nearer to its stalling angle.

Complete failure of control because the tail plane has stal simultaneously with the wings is not an unkn

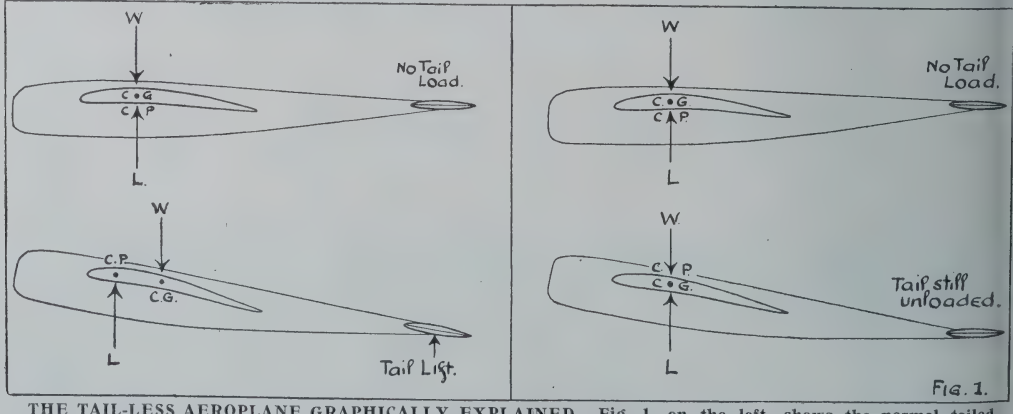


Fig. 1.

THE TAIL-LESS AEROPLANE GRAPHICALLY EXPLAINED.—Fig. 1, on the left, shows the normal tailed aeroplane having a wing with the usual movement of Centred Pressure. At the top, the machine is flying with Centre of Pressure (C.P.) and Centre of Gravity (C.G.) in line, and no load on the tail is needed for equilibrium. Below, the machine is shown stalled, or nearly so. The C.P. is far forward of the C.G. and a big upload on the tail must be provided for equilibrium. The tail therefore must be at a large angle and itself approaching the stall.

On the right the Figure shows a similar machine with a wing having a stationary C.P. in line with the C.G. at all incidences. Even near the stall (lower figure), no tail load is needed for equilibrium. The tail is therefore at the no lift angle and the whole possible range of tail movement is available for control.


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phenomenon, but can generally be avoided by proper arrangement of the C.G. and C.P. relations and by making the tail of adequate size. But the fact that the tail is already heavily loaded in order to trim the machine at coarse angles means that there is less disposable tail force for manœuvring, and therefore that the controls are less powerful in this condition than at finer angles.

Why Ailerons Fail at the Stall.

Normal ailerons are actually part of the wing itself. The wing will begin to stall at the centre, so that at the limiting angle of normal flight, the centre of the wing is just stalled, and the tips, including the ailerons, are just not stalled. If a machine is in this condition with the ailerons central, and one of them is pulled down, the effective incidence of the wing tip is increased, and so is the camb The result—at the beginning of the process—is to increase t lift of that tip as a result of the increased camber, fo heavily cambered wing just stalled will generally have higher lift than a less cambered wing just not stalled.

It is generally supposed that the chief result of stalling that the lift ceases to increase and actually decreases w further increase in angle. Really more important is the f that at the stall the resistance increases at a very great r so that the effect of pulling down the nearly stalled aileron very slightly to increase the lift, but also very greatly to crease the resistance of that wing tip. The result is that t wing tip slows up, the lift decreases despite the increa lifting capacity of that tip because the air speed is reduc and the wing instead of being raised actually falls. This

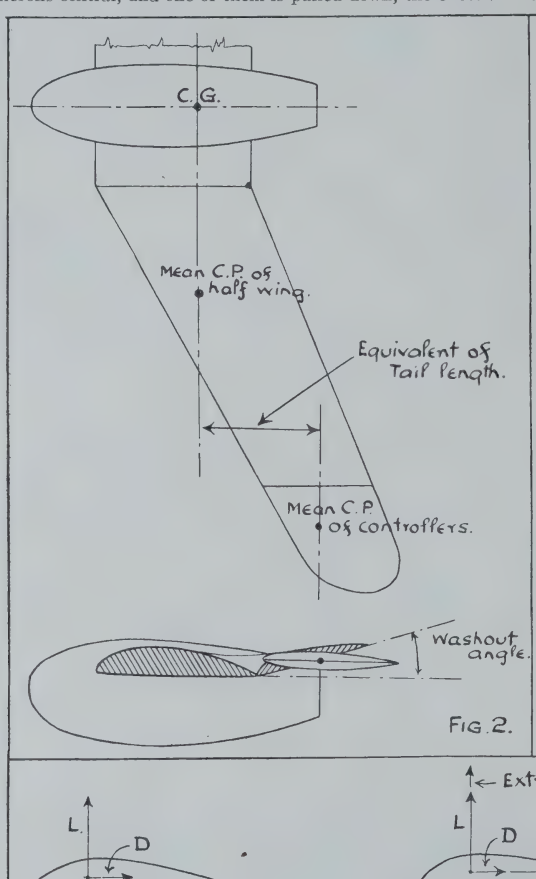


FIG. 2.

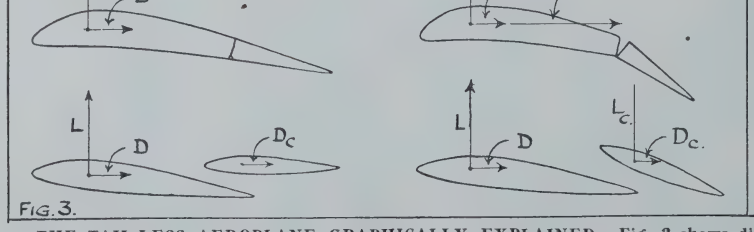


FIG. 3.

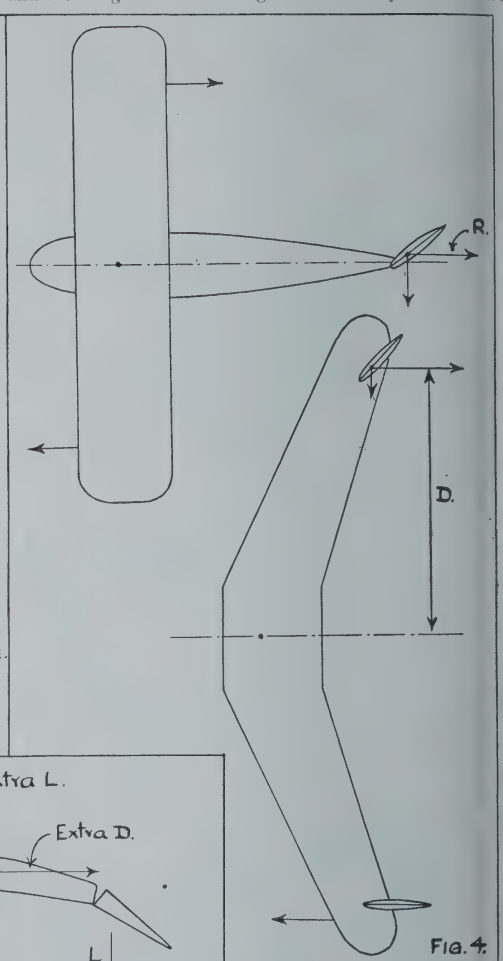


FIG. 4.

THE TAIL-LESS AEROPLANE GRAPHICALLY EXPLAINED.—Fig. 2 shows diagrammatically the Hill Tailless Aeroplane. Here the wing is made to have a stationary C.P. by the use of a sweep-back and a "washout." Large "Controllers," hinged at the wing-tips, serve in place of the tails of Fig. 1, and, like the tail of the machine on the left of that figure, they are not required to carry any load to maintain equilibrium. Consequently none of their range of useful angle of incidence is used up in maintaining equilibrium and is all available for control.

Fig. 3, Lateral control, normal and tail-less types. Above is shown the effect of pulling down the aileron on a nearly stalled wing. A little increased lift (L) is obtained—at the cost of a great increase in drag (D). Below is shown the effect of pulling down the controller on one tip of the Hill tail-less type. The controllers are shown as separate from the wing proper in order to give a clear idea of their function. The controller starts from the "no lift" position, and therefore, unlike the already nearly-stalled aileron, can produce a large increase in lift (Lc) for a small increase in drag (Dc).

Fig. 4, Rudder Control.—If the rudder of the normal aeroplane is put over to a coarse angle, a side force in the required direction is produced, and also a large drag force, R. This last force acts practically along the line of flight behind the C.G. and can produce no useful effect. (Top figure.) When one of the wing-tip rudders of the Hill machine is put over the drag force, R, acts at a large distance (D) from the C.G. and produces a large effect in the required direction. Thus even when the rudder is "stalled" it is effective.

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the beginning of a spin, but the precise nature of the final result is not of any importance to this argument.

The essential point is that here again, as the machine as a whole approaches stalling, so also do the ailerons. Efforts have been made to avoid this difficulty by setting the ailerons up relatively to the wing chord, so that when the wing as a whole is stalled, the wing tips comprising the ailerons are some degrees away from stalling. These efforts have achieved some success, but, here again, the nearer to stalling the wing, the smaller the range of movement possible on the ailerons before one of them is also stalled. Consequently control power diminishes, and in bad cases finally disappears as the machine approaches the stalling point where control is most necessary.

Movement of C.P. the Cause of Control Trouble.

The inherent instability of the normal aeroplane is mainly the result of the variation in the position of the centre of pressure of the ordinary cambered wing. If the wing considered earlier had its C.P. at one-third of the chord, not only at 4° incidence, but also at all other possible incidences, then provided the C.G. were also at one-third the chord it would be in equilibrium at all and every incidence, and no load on the tail would be required for steady flight in any possible attitude. On the other hand, such a wing would be entirely indifferent to its own attitude. If a gust caused the incidence to change, the wing would do nothing to resist that change, or to restore the original incidence, and either stability or control, or both, are required to make a flyable aeroplane.

The movement of centre of pressure of a cambered wing depends entirely on its curvature. A wing whose camber is entirely concave downwards (the normal wing) has the unstable characteristics already described. Turn that wing upside down and the centre of pressure moves in the opposite direction—so that increase of incidence moves the C.P. back and this produces a moment tending to restore it to the original attitude. Stability could therefore be attained by using a normal wing upside down, but only at the sacrifice of very much efficiency. Moreover, the degree of stability would be unnecessarily high for any purpose.

An uncambered surface—a flat plane, or a symmetrical streamline—have practically stationary C.P.s, but owing to their small maximum lift are not suitable for many types of aeroplanes.

Neutralising C.P. Movement.

The unstable qualities of the normal cambered surface may be reduced, neutralised, or reversed either in the usual way by fitting a tail, by sweeping back the wing tips and "washing out" the incidence, or by giving to the section a reversed camber towards its trailing edge. All three methods are essentially equivalent. They all depend upon the presence behind the normally cambered part of the surface of a further part which is preferably less cambered, but must be at a less angle of incidence.

The extent to which the after part of the system must be of reduced area, camber and incidence, to produce a given result, depends on the distance of this part behind the other.

The separate tail can be a long way behind the front lifting surfaces and can be of relatively small area, need not differ greatly in camber from the front part, and need only work at a relatively small difference of angle to secure a small degree of positive stability—at any rate, up to the stalling point. In the swept back wing the distance of the "washed out" tip sections behind the central portion is less and generally the area of the tips which act as a tail have to be larger. With a straight wing a definite reflex curvature must be given over the whole span to produce a stationary C.P.

It might therefore be thought that the tail arrangement was necessarily superior to any arrangement of wing which in itself gave either neutral or any degree of positive stabiltiy.

Interference Effects.

What may be called interference effects, however, come into play. The tail works in both the down wash of the wings and usually in the slipstream of the airscrew. The result is reduction in its effectiveness and an increase in its resi ance.

In the case of either the reflexed or the swept back wing interference between the sections specially concerned wi providing lift and those concerned with stabilising is gene ally beneficial. The lift is greater and the drag is less tha the sum of lift and drag of the separated components wou be. Moreover the stabilising forces are developed in th wing itself and do not have to be transmitted to the win through a separate tail-carrying structure—such as a fusela —which necessarily adds to both resistance and weight. cannot be said with certainty at the present upon which si the advantage really lies.

The Ancient and the Modern Objective.

The early Weiss and Dunne aeroplanes used the swept ba and washed out wing to make a stable aeroplane, giving their wings such a degree of sweep back and wash out as reverse the travel of C.P. of the normal wing. Their wing therefore, attempted always to maintain one fixed incidenc and their controls were inadequate to alter their attitude e cept over a very small range.

Capt. Hill has designed the Pterodactyl with just sufficie sweep back and wash out to give the wings a stationa centre of pressure. His wings alone, therefore, are neutral stable—that is, they are in equilibrium at any angle of i cidence. As a matter of fact this is true only up to the sta After that the C.P. moves in a stable direction, and the win alone, properly ballasted and released in a stalled attitud would tend to unstall themselves, but would quite possibly on to nose dive at a very high speed.

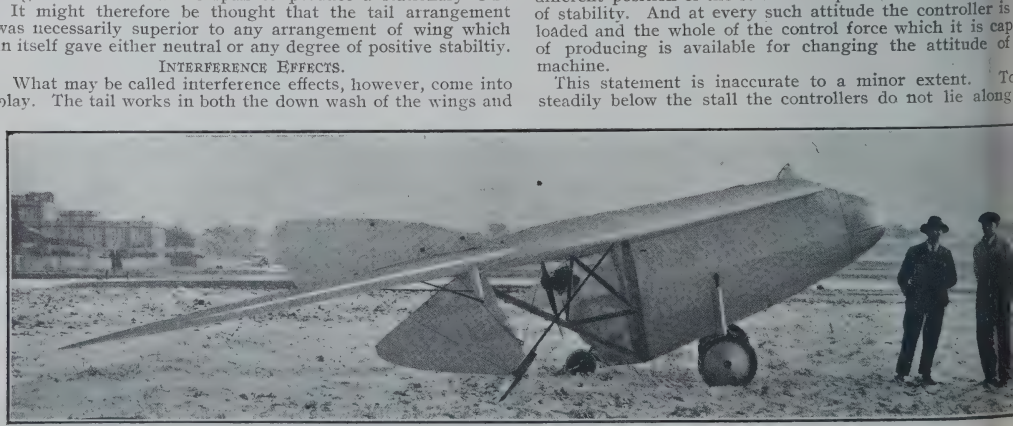
On the ends of these neutrally stable wings he has fitt what he calls controllers—which are really combined elevato and ailerons. The controllers are behind the C.G. and the fore if they are producing a lift force, they tend to ca the machine to dive. As the wings themselves are alrea in a state of equilibrium at any angle of incidence, a lift the controllers will cause a diving movement whatever t attitude of the machine. In other words, the machine c only remain in equilibrium so long as the controllers deve no lift, and (as they are of symmetrical section) are at z incidence.

Unloaded Controls.

To fly steadily at say 6° incidence the controllers must along the direction of the air flow—that is, at 6° less th the incidence of the wing. If the pilot sets them at 6° l than the wing incidence when the wings are at so incidence other than 6°, the controllers will not be at z incidence. If the wing angle is, say, 4°, the controllers w be at —2°, and will immediately develop a down load, wh will increase the incidence of the machine and disappear o when the wings reach 6°. If—as will happen—the machi shoots past 6° incidence, the controllers acquire a posit incidence—at 7° on the wing they will be at 7°–6° or 1° will develop a lift which tends to force the wings back to Thus using the controllers as elevators, the machine is o in equilibrium when the controllers are at zero incide and the wings are consequently at an incidence equal to angle between the wing chord and the controller chord. so long as this difference in angle is unchanged the control produce a righting moment immediately the wing attit alters.

So long as the relative position of wings and controllers mains the same—so long as the stick is held fixed that the machine is definitely stable at one incidence, but e different position of the stick corresponds to a different a of stability. And at every such attitude the controller is loaded and the whole of the control force which it is cap of producing is available for changing the attitude of machine.

This statement is inaccurate to a minor extent. To steadily below the stall the controllers do not lie along



THE TAIL-LESS AEROPLANE.—Side view of Capt. Hill's Monoplane with Bristol Cherub engine.



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line of the "relative wind," and are to some extent loaded. They are loaded downwards—to keep the machine stalled. Their incidence is negative, and to unstall the machine this down load must be reduced, so that the pilot to unstall moves his control surface further from its stalling angle—instead of nearer to it as is the case in the normal aeroplane.

The same controllers are also used for lateral controls, by moving them differentially—that is increasing the incidence on the side it is desired to raise and decreasing that on the other side. As has been pointed out these controllers are always at zero incidence in steady normal flight, and even when the machine is past the stall they are only at a small negative incidence. If in this condition one wing falls, the controller on that side has to have its incidence increased. It therefore has the range from its negative elevator setting up to zero plus that from zero up to its positive stalling incidence available for lateral controlling purposes—instead of starting from a nearly stalled condition as does the corresponding aileron. The lateral control is therefore completely unimpaired except in so far as the low speed reduces its power, and does not suffer that reversal of effect common to the usual lateral control.

The Rudders of the Pterodactyl.

The rudders of the Pterodactyl are also somewhat different in their action from that of the usual type. The usual control rudder when set over develops a sideways force—similar to lift—and also some extra drag. The sideways force acting well behind the C.G. tends to yaw the machine—the drag has no beneficent effect. If the rudder is put over too far it stalls, its value as a rudder decreases, and the drag merely tends to slow up the machine.

The rudders of the Pterodactyl are at the wing tips, and a little behind the C.G. To turn to one side, the rudder on that side is moved outwards. A lateral force is developed as in the ordinary case, and causes a yawing moment—which however is small because the rudder is not very far behind the C.G. An increase in drag is also produced, and as this is not on the centre line, but far to one side, the drag also produces a yawing moment. Even if this rudder is put over to such an angle as to cause it to stall, the big increase in drag serves the desired effect of producing a large rudder moment.

It will be seen therefore that essentially Capt. Hill has produced an aeroplane in which the controls do not stall wh the aeroplane stalls, and one which answers to the definiti of the completely controllable aeroplane—it is stable at a attitude of flight, and this attitude is determined quite definit by the position of the control surfaces, and in no way by t conditions in which a given control movement has been ma And the method of achieving this end has been to arran for the control surfaces to be unloaded in all attitudes steady flight so that the whole of their available power c be used for control purposes only.

Possible Alternatives.

Now that Capt. Hill has pointed out the way to this de able end a number of alternative possible methods beco obvious, but all of them boil down in the end to the sa thing—that of producing a wing system with a station C.P. and providing control surfaces distinct from the s porting system, which are entirely free from load in norr flight and therefore always ready to develop their full cont power. Tail-lessness is not essential. An aeroplane of m or less conventional design could be fitted with a fixed plane—or one having an adjustment to trim for varying lo —which would secure a stationary C.P. for the combinat of wing and tail plane.

Elevators might be attached to this tail but should p ferably be arranged not as flaps continuing the fixed tail s face but as free surfaces either well above or beyond the t of the tail plane.

Ailerons of the usual form which shared the stalled c dition of the wing as a whole must equally be replaced free surfaces which do not share the air flow over the wi themselves.

A normal rudder of adequate size would in such a c probably prove satisfactory.

The tail-lessness of the machine actually built was dicta by the structural simplicity, and general cleanness of des which could be achieved without sacrificing any of the ess tial features which it was sought to embody. It is quite p sible that with further experience it may be found neces profoundly to modify the general arrangement; but it scarcely be doubted that Capt. Hill has produced a v novel and very successful method of dealing with the probl of aeroplane control.

THE TAIL-LESS AEROPLANE.

(Captain Hill's Lecture.)

Capt. G. T. R. Hill's paper on "The Tail-less Aeroplane" read before the Royal Aeronautical Society on Apr. 22, was of singular interest, as a record of experimental and research work initiated by personal and private enterprise and carried to a successful conclusion.

In his introduction Capt. Hill records his indebtedness for assistance rendered to him by various official agencies (notably the Aeronautical Research Committee and the R.A.E.) during his work, which in no wise detracts from the fact that essentially the work was initiated and carried through entirely by Capt. Hill's personal endeavour.

Capt. Hill records that for three years he held a studentship awarded by the Royal Commission for the 1851 Exhibition and in the seclusion of a little country cottage was able to think about anything he liked without being worried for results at the end of the week. His thoughts turned upon safety in flight—particularly freedom from accident caused through lack of control. Forced by the fact that about 50 valuable lives were being lost in the R.A.F. every year, and that a large proportion of these were due to loss of control, he set himself to try to design an aeroplane which would never, through error on the part of the pilot, get out of control.

The Basic Conception.

As a basic conception the author advances the simple condition that the forces acting on an aeroplane in steady flight consist essentially of the weight acting vertically downwards, and the total resultant air forces acting vertically upwards through the centre of gravity. In order to trim at different speeds, the total air force resultant must pass through the C.G. at more than one attitude. Imagining for simplicity that the C.G. is on the chord, and taking centre of pressue not as that of wings alone but of the whole system of surfaces after the elevators have been set to trim, the centre of pressure must remain stationary with change of attitude if the machine is to have any speed range. This stationary C.P. is the fundamental requirement on which the author fixes attention.

Control surfaces on an aeroplane perform four duties:—(i) They trim the aeroplane at different speeds, being set to such an attitude as to ensure the C.P. coinciding with the C.G. (ii) They trim the aeroplane with varying load distribution. (iii) They correct disturbances caused by gusts, and (iv) They secure the power of manœuvring.

In regard to the last function Capt. Hill points out that the shift of C.P. required for manœuvring is very small, and the angle through which control surfaces must be move produce such a shift is also very small. Nevertheless s control movements do not suffice to produce rapid manœuv because as soon as the aeroplane begins to turn, the moves as the result of that turn in such a way as to cou act the effect of moving the control. Thus the control m ment actually needed to manœuvre is mainly require trim the aeroplane while turning, and only to a small ex to produce the angular acceleration of the actual manœu Thus the last item in the duties of controls is partly alr covered by (i) (trimming) and the only new duty invo is that of producng acceleration.

The last three functions of the controls present little culty. Correction for varying load distribution has t watched but can usually be secured without trouble. It be generally agreed that if rapid manœuvring is pos gust disturbances can be dealt with providing great stability is not present, and the provision of the angula celerations needed for manœuvring requires only small trol movements. Thus the problem of control resolves essentially into the maintenance of trim, and Capt. argues that the problem is solved when a stationary throughout the range of straight flight and the ra manœuvre required have been achieved—provided gros stability is avoided.

The Failure of Normal Controls.

Capt. Hill then reviews the effectiveness of the co fitted to the normal aeroplane. He remarks that suc examination would be comparatively easy if the elev only pitched, the lateral control only banked, and the r only yawed, the aeroplane. Unfortunately the contro the normal aeroplane had Irish characteristics—they lik occasion to do someone else's job to the neglect of own.

In the normal aeroplane the elevator gave an ample m of control down to close to stalling point. But as this was approached this margin is used up in maintaining and the stalled aeroplane has no elevator control left.

Except for counteracting engine torque, lateral cont not occupied in maintaining trim, and up to stall, the mal aeroplane behaves satisfactorily. At and beyond the the effect of lateral and directional control interact o another in a complex manner. This interaction is know generally fairly well understood. Normal ailerons whe to produce a roll also produce a yawing couple, which neutralised by the rudder causes a yaw and this yaw se

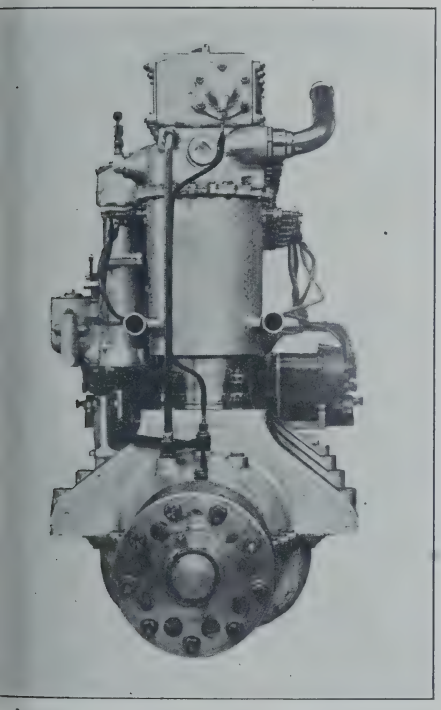
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a rolling couple opposed to the couple directly caused by the aileron. Below stalling the yawing couple is small and easily counteracted by the rudder. Beyond the stall it becomes very large and the normal rudder will not counteract it, and the ailerons then become useless.

A little rudder is used in counteracting the effect of spin in the slipstream, but this occupies only a small part of the available rudder power. As with the ailerons the normal rudder is adequate below the stall—as mentioned above, it fails beyond the stall to control the yaw caused by rolling.

Thus it is concluded that the normal aeroplane's controls are satisfactory below the stall, but they become ineffective at the stall, and at the same time serious lateral instability develops.

The Evolution of the Tail-less Type.

The evolution of the tail-less design started with the idea of a wing which should have a stationary C.P. Two possible methods of securing this were possible. One consisted in reflexing the trailing edge of a rectangular wing, and the other in sweeping back the tips and progressively "washing out" the incidence. When this question was first considered much less was known about wing sections with a stationary C.P. than is known to-day, and from such data as were then available it seemed that the loss in maximum lift and in L/D ratio would be less with the swept-back wing than with the reflexed section.

A swept-back wing with a 5° washout was therefore chosen after calculations which suggested that the required stationary C.P. could thus be attained. Movable control surfaces—called "controllers"—were fitted beyond the wing-tips. These when operated together act as elevators, when operated differentially as ailerons.

If the C.P. is stationary, no force is required on the controllers to trim at any attitude of flight, and the controllers therefore will lie at zero incidence at all speeds of flight, and will have their full angular range from no lift to maximum lift available in either direction for control purposes. It is found in practice that this condition is very nearly attained. The C.P. of the wing remains practically stationary at .3 chord behind the leading edge of the mean chord. After stalling it moves steadily back to the middle of the chord at 90° incidence. Thus when used differentially as ailerons the controllers start from practically no lift, and have the small ratio of yawing to rolling of an unstalled surface even at and beyond stall on the wing itself.

To produce yawing vertical surfaces or rudders were to be mounted above and below the end of the fixed wing on the rear spar. These were to be single acting, that is the surface on one side only was to be moved outwards to produce a yaw towards that side. The force on the turned surface acts approximately at right angles to that surface. As the surface is turned, the force increases, and its line of action passes progressively further behind the centre of gravity. The yawing moment produced therefore builds up increasing rapidly and very large rudder angles can be used effectively.

The loss in maximum lift and in L/D with this arrangement of wings and control surfaces was estimated and found to be small. To counterbalance and possibly outweigh this loss a saving in structure weight was expected.

Official Assistance Obtained.

In the Spring of 1923 Capt. Hill outlined his proposals in a report to the Aeronautical Research Committee and suggested that a full-sized glider should be built to try them out. He regarded his design as the natural development of old-time tail-less aeroplanes, particularly the Dunne, which he considers to have been ahead of any aeroplane since built in respect of stability.

Capt. Hill was so encouraged by the neat dovetailing of the features of this design, and the advantages to be gained by it were so clear to him that with the backing of a friend he decided to start on his own and to design and build a tail-less light aeroplane in his back garden. The machine was a semi-cantilever monoplane, and in the interests of "safety first" was designed so that it could first of all be flown as a glider, with a loading of 1.85 lbs./sq. ft. and a landing speed a little over 20 m.p.h.

After starting on the definite design, the Aeronautical Research Committee concluded that the ideas embodied in the report to them justified model tests, and these were put in hand at the R.A.E. without delay. Thus design and construction of the machine, and the model tests went along together, and the design was modified in the light of the model tests where found desirable. These modifications were not serious and involved no scrapping of parts already made.

The model tests showed that the stationary C.P. had actually been very closely attained, that the presence of the controllers increased the maximum L/D by about 15 per cent., the wing behaving as though it had an aspect ratio corresponding to the span over the controllers and not merely the span of the lifting section alone, and that the rudder yawing moments did not fall off with increasing incidence, but were actually more powerful at 40° incidence than at 5°.

In the Winter of 1923/24 as the result of discussion with the Airworthiness Department of the Air Ministry, Capt. Hill came to the conclusion that he was making his structure unnecessarily strong, and that with slight modification the machine could be made into a two-seater. About the same time the Aeronautical Research Committee decided, in view of the successful progress of model tests, to help with a grant towards the out-of-pocket expenses. Design and construction was therefore continued on two-seater lines.

Gliding Trials.

As a glider the machine was completed in December, 1924, and was tried in a remote spot on the South Downs. The first glide was made on December 13. On the fourth glide the machine appeared practically out of control, and it was found that one of the control-operating tubes had been buckled—probably in handling. As repairs would have taken some time, and the other trials had shown the control system to be effective, the camp was broken up and the machine dismantled.

Thereupon the Air Ministry provided the loan of a draughtsman and a fitter from the R.A.E. to expedite the design of the body and engine mounting for a Bristol Cherub, and also arranged for the making of steel sockets and fittings at the R.A.E.

General Characteristics of the Pterodactyl.

The final design was finally settled by the summer of 1925, and the "Pterodactyl," as Capt. Hill has christened the machine, has the following general features.

The wing has a sweep back on the leading edge of 31°, and on the trailing edge of 14°. At the points of attachment of the bracing struts, the section is Airscrew 4 modified by reflexing the trailing edge by .015 of the chord. From this the section tapers—both inwards to the centre section and outwards to the tips—to .7 of the ordinate of the original section. The incidence is washed out 3° at the struts and a further 3° at the tips. There is no dihedral. The controllers are of T.P.3 section, and are statically balanced about their hinges to avoid the possibility of unstable oscillations.

A variable gear ratio is fitted between the control stick and the controllers so that at the low speed end of the flying range the ratio is about seven times as high as at the high speed end.

The rudders of the Pterodactyl are arranged so that they may be operated in opposite directions simultaneously to act as an air brake. This renders it possible to halve the gliding angle of the machine without increasing speed, and at the same time does not interfere with normal rudder control, as the effect of putting over the rudder bar with air brake on is to reduce the angle of the rudder which opposes the desired turn, leaving the other practically as it was.

The body, which has to carry no tail or tail-skid loads, and therefore can be much lighter than that of the normal aeroplane is built up with a specially light balsa ply-wood which is one half the weight of birch ply-wood. The undercarriage is a three-wheeled affair. The front wheels are carried on a common axle supported by two legs passing into the body and there anchored with shock-absorber. These legs are wire braced fore and aft and laterally. A third wheel aft is carried in a fork something like the front fork of a cycle. It is coupled to the rudder bar for steering on the ground, and is fitted with a locking gear so that it acts as a brake when landing. As this wheel carries about one-third the total weight, it gives a very much better pull-up than the usual tail skid.

The control stick is fitted with a spring which can be adjusted to give any required force on the stick between 15 and —15 lbs. This spring is of Capt. Hill's constant force type in which the load does not change with the stick position, and consequently when used to trim the machine does not make the controls heavier to work.

Flying Tests.

The machine was completed in October, 1925, and on the 25th a taxying trial was made. This led to the addition of more shock-absorber to the rear wheel. On Nov. 2 the first flight under power was made. The weather conditions were poor, and a slow-motion picture of the performance was made so that in the event of a crash the cause might be the more certainly ascertained. On the third flight a parachute was carried, and stalling was tried. Up to date 21 flights have been made on the machine.

The top speed at 685 lbs. weight, and 3,440 r.p.m., is 70 m.p.h. The stalling speed is not accurately known but is very nearly 29 m.p.h. By adjusting the spring trimming gear the machine can be flown hands off at any speed. There is a slight change in trim, engine on and engine off at high speeds, which becomes applicable at low speeds. The use of the air brakes has no appreciable effect on trim. There is no turning tendency either engine on or engine off.

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The machine is stable longitudinally and laterally at all speeds. It has a relatively quick period of oscillation fore and aft, and is less damped than in the usual type. The lateral period is shorter but heavily damped. It will fly with feet off the rudder bar, and if the rudder is kicked over and released it returns to the central position and the machine resumes straight flight.

It is sensitive to bumps, owing to the light wing loading and is affected noticeably more in the fore and aft direction than laterally—which may be explained by the fact that the machine is a small one fore and aft and a large one laterally. Capt. Hill has the impression that bumps are less felt when stalled than in normal flight.

The most noticeable and least satisfactory feature of the controls operated by the stick (the controllers) is their excessive inertia, which masks the aerodynamic "feel." This inertia effect is peculiar to the particular machine, and can be greatly reduced, by lowering the control gear ratio, reducing the area of the controllers, and reducing the inertia of the balance weights. (This machine was designed with excessively large controls as a precaution.) Apart from this effect, longitudinal control is sensitive, powerful and reasonably light. It is particularly light on steep turns.

The Absence of a Definite Stalling Point.

There is no definite stalling point though there is a definite minimum speed. With engine throttled the machine will glide at say 40 m.p.h. with the wing chord horizontal. If the stick is pulled slowly back, the speed decreases, the angle of descent increases, but the aeroplane preserves its attitude to the horizon. After the minimum speed is passed, the rate of descent increases more rapidly, but the machine remains in good control even in bumps. In this condition it can be unstalled without diving by easing the stick forward gently.

The lateral control, apart from the inertia effect, is normal. It remains effective when stalled. It is sluggish owing to the low air speed but has none of the "sloppy" feel of ordinary ailerons.

The rudder control differs more from normal than do the others. If the rudder is pushed over in straight normal flight, the turning effect is surprisingly small, yet when manœuvring there is no lack of rudder power. (Presumably this means that bank must be applied at the same time as rudder to produce a turn.—Ed.) On turns—and particularly steep turns—rudder must be held on, and the steeper the turn the more rudder is needed. In normal machines rudder must be reversed in steep turns to keep up the nose. Thus the Pterdactyl has a more straightforward rudder control than the normal. Stalled, the rudder is adequate to maintain direction and to make gentle turns even in bumpy weather.

Certain difficulties arose with the rudder because the air stream under the wing is inclined outwards and the rudders lay parallel thereto and slacked off both rudder wires. As the divergence of the air stream varies with speed it has not been found possible to rig them at an angle correct for a speeds and an excessive slack is still present at low speed

When the air-brake handle is pulled the machine slows u and the nose must be dropped to maintain speed. Th stability of the machine suffices to do this if the stick is n used. With the brake on, the machine glides comparativel steeply at 40 m.p.h.—the normal approach speed, and it b comes a very simple matter to judge an approach. The en gine may be shut off anywhere in the region where a glid with air brake off would overshoot, and with air brake fu on would fail to reach the landing point. During the glide th machine can be steered to the landing point by manipulatin the brake. The pull required to hold on the brake is alway noticeable, and therefore the pilot cannot forget that it "on."

Better Control than Anything now Existing.

In conclusion Capt. Hill considers that when the inerti of the controls has been reduced to reasonable proportion the control of the Pterodactyl is better than that of anythin at present in existence. Each of the four controls does it own job and does not interfere with any other. On turn both fore and aft rudder controls are more straightforwar and simple than in the normal aeroplane. There is n marked diversion between normal and stalled flight, and th pilot can unstall without increasing the rate of descent. Cor trol is good up to incidences in the neighbourhood of 45°, an the objective towards which he set out three years ago ha been achieved without loss of performance. Beyond thi Capt. Hill claims that the tail-less design can be built at reduced structure weight, that the pusher type becomes pos sible without loss of performance, and that an improvemer in the general arrangement of the flying boat can now b made.

An appendix gives the following data of the experimenta machine:

Area of main plane	223 sq. ft.
Wing span, overall	45 ft.
Wing span (Fixed part of wing)	30 ft.
Area of controllers	55 sq. ft.
Area of rudders	13 sq. ft.

Weights.	With large wheels.	With small wheels.
Weight empty	458 lbs.	444 lbs.
Weight of fuel and oil... 30 lbs.		
Weight of pilot 170 lbs.		
Total, single seater	658 lbs.	644 lbs.
Weight of passenger ...170 lbs.		
Total, two-seater	828 lbs.	814 lbs.

Loading—	
Lbs. per sq. ft., single-seater	2.9
Lbs. per sq. ft., two-seater	3.7
Lbs. per h.p., single-seater	20
Lbs. per h.p., two-seater	25

AN EARLY RESEARCH WORKER.

"The Mechanical Investigations of Leonardo da Vinci." By Ivor B. Hart. (London: Chapman and Hall Ltd. 16s. net.)

In this excellently produced book Mr. Hart has endeavoured to show as completely as is possible from such records as do exist the precise extent of Leonardo da Vinci's knowledge of mechanics in general, to what extent that knowledge was derived from earlier authorities, to what extent it may be credited to Leonardo's own experiments and deductions, and in particular to give the fullest possible account of what is known concerning the ideas and speculations on the subject of flight of this very early pioneer of Aeronautics.

It is extremely difficult for a modern student, even with the most elementary knowledge of mechanics, to realise how vast was the ignorance of even the most learned of the ancients upon this subject. At the first sight also this ignorance is apt to appear even greater than in fact it probably was by reason of the lack of an adequate and accurate terminology wherein their knowledge might be expressed.

Thus to many this account of Leonardo's mechanical writings will inevitably suggest that an ignorance—by modern standards so dense—can only have been the result of a relatively limited intelligence. A knowledge of the history of mechanical science will, however, show that this view is certainly unjustified, and that Leonardo must in fact have arrived at a general idea of a number of the principles of mechanics which it was not possible accurately to state in precise language, and to verify by precise measurements, until both methods of expression and methods of measurement adequate for the purpose had been evolved—a process which occupied in some cases centuries.

Mr. Hart gives an excellent account of the difficulties under which Leonardo laboured in these respects, and his work should very greatly assist those who are interested in th early history of mechanical science generally, and aeronautic in particular, to realise how great were the obstacles whic had to be overcome by the pioneer scientists of mediæva times.—W. H. S.

A SON OF LAMECH.

"1944." By the Earl of Halsbury. Thornton Butterworth 15, Bedford Street, London, W.C.2. 302 pages. 7s. 6d net.

Lord Halsbury has written a story of a war of the futur which is an entertaning yarn but which will at the same tim leave some of his readers with rather an uneasy feeling.

The story starts with a prologue of 6000 B.C. and tells hov Noë, the first prophet without honour, insisted on building a large boat to live in when the Euphrates should burst it banks, despite the derision of his friends and neighbours He is ably assisted in his shipbuilding operations by his thre dutiful sons, Ham, Sem and Yafit. Conscientious reader of The Aeroplane will, by this time, have recognised th Editor's former friends, Ham, Shem and Japhet, who hav been somewhat superseded lately by the commissions an omissions of the builders of more modern craft.

The second part of the story describes how John Blundell the Noë of his generation, makes preparations for salvin his family and followers from the "obliteration of civilisa tion" which he prophesies will result from the next war.

The third and main part of the book describes the grea war of 1944 and here again readers of The Aeroplane wil feel quite at home with Kernin, the great Russian Napoleon and Kieng Lung the dictator of China. There is a nic coloured illustration of these two "civilisation-obliterators on the wrapper.

How the War came and what happened to the 1944 Japhe and Mrs. Japhet make a very thrilling tale.—C. M. MCA.

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THE ROYAL AIR FORCE.

The London Gazette.

Apr. 20.

General Duties Branch.—Air Commodore Cyril L. N. N. Newall, C.M.G., C.B.E., A.M., is appointed Director of Operations and Intelligence, Air Ministry, and Deputy Chief of the Air Staff (Apr. 12) (*vice* Air Vice-Marshal John Miles Steel, C.B., C.M.G., C.B.E.).

The following Flg. Offs. are granted perm. comns. in this rank (Jan. 1):—H. A. Anson, E. D Barnes. The following Flg. Offs. are transferred to the Reserve:—Class A.—G. F. Blackburn (Apr. 23). Class C.—A. L. Pearce (Apr. 15).

Flt. Lt. F. M. Paul is placed on the retired list at his own request (Apr. 17). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty (Apr. 21):—C. V. Godfrey, W. A. Hills.

Stores Branch.—The following Flg. Offs. are granted perm. comns. in this rank (Apr. 21):—J. H. P. Clarke, G. G. C. Pigott, F. A. R. Smith. Plt. Off. (on probation) C. P. Marshall is confirmed in rank (Feb. 10); Flg. Off. J. R. Brown is confirmed in his appointment in the Stores Branch (Apr. 7)

Reserve of Air Force Officers.—The following are granted comns. in Class A.A., General Duties Branch, as Plt. Offs. on probation (Apr. 6):—L. E. B. Alexander, W. T. W. Ballantyne, W. Scott. The following Plt. Offs. are promoted to the rank of Flg. Off.:—W. F. A. Snell (Nov. 1, 1925); C. L. Atkinson (Feb. 4); R. W. Cawston (Feb. 4); A. B. Roche (Feb. 4); D. M. Tomlinson (Feb. 11); W. A. R. Speight (Feb. 24). The following are confirmed in rank (Apr. 13):—Flg. Off.—D. Gardiner. Plt. Offs.—E. B. Fielden, C. Kenney, H. Rhodes.

The following Flg. Offs. are transferred from Class A to Class C:—F. E. Hills (May 23, 1925); E. F. Haselden (Apr. 2); E. H. Bird (Apr. 14); M. D. Allen (Apr. 20). Flg. Off. G. Clark is transferred from Class Dii to Class Di (Apr. 15). The following Flg. Offs. relinquish their comns. on completion of service:—J. Edelsten, E. B. Wilson (Mar. 10); H. E. Browne, N. H. Thackrah (Apr. 20). The comn. of Plt. Off on probation V. Schofield is terminated on cessation of duty (Mar. 28).

Auxiliary Air Force.—Medical Branch.—The following to be Flt. Lt.:—No. 602 City of Glasgow (Bombing) Sqdn.—J. C. H. Allan, M.B.

Appointments.

Week ending Apr. 26.

General Duties Branch.—Group Captains L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., A.D.C., to R.A.F. Depot, Uxbridge, Supernumerary, pending posting overseas, 1/5. N. D. K. MacEwen, C.M.G., D.S.O., to Air Ministry on appointment as Deputy Director of Training.

Wing Commanders W. C. P. Young, O.B.E., to R.A.F. Depot, Uxbridge, for administrative duties, 3/5. R. Leckie, D.S.O., D.S.C., D.F.C., to H.M.S. *Hermes*, for duty as Senior Air Force Officer, 30/3.

Squadron Leaders G. H. Bowman, D.S.O., M.C., D.F.C., to H.Q., India, 30/12. E. D. Atkinson, D.F.C., A.F.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4.

Flight Lieutenants G. F. Moody, to School of T.T. (Men), Manston, 13/4. R. F. Durrant, A.F.C., to E. and W. School, Flowerdown, 26/4. F. St. J. Woollard, A.F.C., to No. 24 Sqdn., Kenley, 1/5. T. P. Y. Moore, to School of T.T. (Men), Manston, 1/5. E. T. Carpenter, A.F.C., to Station H.Q., Bircham Newton, 21/4. G. Y. Tyrrell, M.C., to No. 29 Sqdn., Duxford, 28/4. G. V. Howard, D.F.C., to A. and G. School, Eastchurch, 15/3. H. C. Irwin, A.F.C., to School of Balloon Training, Larkhill, 23/4. C. McM. Laing, M.C., A.F.C., to No. 6 Arm. Car Coy., Iraq, 28/3. J. G. Walser, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 14/4. T. M. Williams, M.C., D.F.C., to No. 406 Flight, Donibristle, 6/4.

Flying Officers R. J Copley, to Home Aircraft Depot, Henlow, 8/3. W. H. Stiles, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4. H. V. David, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 21/4. E. F. Haylock, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 6/4. R. D. V. Howard, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 5/4. G. J. Gaynor, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4. A. G. Moon, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4. A. P. Revington, to R.A.F. Base, Calshot, 20/4. B. L. Young, to School of Army Co-operation, Old Sarum, 16/3. S. F. Cole, to H.M.S. *Hermes*, 10/4. H. G. Brookman, to No. 441 Flight, Mediterranean, 10/4. G. A. Kysh, to No. 6 Arm. Car Coy., Iraq, 28/3. J. J. Nolan, to Aircraft Depot, Iraq, 11/3.

Medical Branch.—Squadron Leader J. Rothwell, M.B., to H.Q., Wessex, Bombing Area, Andover, 12/4.

Flight Lieutenants (Hon. Sq Ldr.) W. R. Reith, M.D., A.M., to No. 7 Sqdn., Bircham Newton, 26/4 (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., to No. 12 Sqdn., Andover, 10/4.

Flying Officers R. T. F. Grace, M.B., to No. 41 Sqdn., Northolt, 19/4. L. C. Palmer-Jones, M.B., to R.A.F. British Hospital, Iraq, 22/3. R. J. I. Bell and R. G. Freeman, to Research Laboratory and M.O.S. of I., Hampstead, on appointment to S.S. Comns., 14/4. G. S. Strachan, M.B., to R.A.F. Depot, Uxbridge, 15/4. R. S. MacLatchy, to No. 14 Sqdn., Palestine, 22/3. Flying Officer (Q.Mstr.) W. Gamblen, to No. 1 S.D., Kidbrooke, 1/5.

Stores Branch.—Squadron Leaders F. A. Baldwin, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 9/4. G. Stevens, O.B.E., to No. 3 S.D., Milton, 21/4.

Flight Lieutenants E. W. Lawrence, to No. 1 F.T.S., Netheravon, 22/3. T. A. G. Hawley, to R.A.F. Depot, Uxbridge, 12/4. L. Smith, to Aircraft Depot, India, 13/4.

Flying Officers R. H. Lathom, to Aircraft Depot, India, 13/4. H. A. Williams, to School of Photography, S. Farnborough, 1/4. J. C. Daniels, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4.

Accountant Branch.—Flying Officer F. L. Wood, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 2/4.

A Princess of Great Britain and Ireland.

The Court Circular issued from Windsor Castle on Apr. 2 contained the following announcement:

The King and Queen have received with great pleasure the news that the Duchess of York gave birth to a daughter this morning.

All ranks of the R.A.F. will offer their respectful congratulations to Group Captain H.R.H. the Duke of York, K.G. and the Duchess of York.

The R.A.F. Cairo—Cape Town Flight.

The Cape Flight, R.A.F., under Wing Cdr. C. W. H Pulford, O.B.E., A.F.C., arrived at Kimberley on Apr. 20 and at Pretoria on Apr. 22.

D. Napier and Son Ltd., in a letter dated Apr. 22, state:—

Information has to-day been received from Cape Town that during the journey from Cairo to Cape Town, by a flight of the Royal Air Force, using four Fairey-Napier machines, no mechanical trouble was experienced and the British Napier engines were running as perfectly at the finish as when they started.

This flight has once again proved the reliability and consistency of British aero-engines.

The Royal Tournament.

The Royal Tournament will be held at Olympia from May 20 to June 5 inclusive.

The programme will include a Display by the Royal Air Force under Sq. Ldr. Sherriff, M.C., R.A.F.

The R.A.F. and The Spanish Army.

A special order issued by the Air Ministry on Apr. 2 states that the following telegrams have been exchanged between His Majesty the King of Spain and His Majesty the King in connection with the recent rescue of Spanish aviators in the desert near Amman:—

The King, London.—My people, the Spanish Army and myself are sincerely and immensely grateful for the splendid and successful search operations in finding in the desert Captain Estevez and his mechanic. Please convey these feelings of gratitude to your brilliant and courageous Air Force for their perilous and noble enterprise. I beg you to allow me to have the pleasure to confer a decoration as a token of recognition and appreciation of my nation to the Chief and Officers who have distinguished themselves in this work of humanity and fellowship.—Alfonso R.

The King, Madrid.—I much appreciate your kind telegram and rejoice to think my Air Force were able to rescue Captain Estevez and his mechanic from their perilous position in the desert. I know how gratified all ranks of the Force will be by your message of congratulations and your wish, to which I gladly assent, to confer decoration on those who were concerned in this successful enterprise.—George R.I.

Vacancies in the Reserve of Air Force Officers.

The Air Ministry announces that a limited number of vacancies still exists in the Reserve of Air Force Officers under the new scheme of direct entry into the Reserve.

Applicants need not have had any experience of flying and they must be not less than 18 years of age. Commissions are granted in the first place for five years but extensions may be allowed at the discretion of the Air Council.

Flying training, which will be arranged as far as Service requirements admit to take place at the civil aviation centre which is most convenient to the officer, will consist of a preliminary course of from two to three months (eight or nine weeks should suffice in fine weather) during the first six months of service; six hours' solo flying (to be carried out within a total maximum period of 10 days' training) during the second six months, and 12 hours' solo flying (to be carried out within a total maximum period of 20 days' training) in each subsequent period of 12 months' service.

When undergoing training or if called up for continuous service in an emergency, an officer will receive, generally speaking, the same pay and allowances as an officer of the same rank on the active list. The present rates for a Pilot Officer amount to £1 3s. 1d. a day. In addition, an annual retaining fee is payable, subject to compliance with the regulations.

The training centres at present are: London (Stag Lane Aerodrome, near Hendon)—The De Havilland Aircraft Co. Ltd., and Bristol (Filton Aerodrome, near Bristol)—The Bristol Aeroplane Co. Ltd.

The Instructors of these Training Centres are Officers of the R.A.F. Reserve who have lately passed through a refresher course at one of the R.A.F. Training Schools.

After the preliminary training is completed, the annual call on an Officer's time is approximately a fortnight, and this period may be spread over the whole year and carried out in the best way suited to each Officer's circumstances.

Application forms and further details can be obtained by applying to the Secretary (S.7 Reserve), Air Ministry, Adastral House, Kingsway, London, W.C.2.





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The Middle East Dinner, 1926.

The Fifth Annual Middle-East Dinner will be held at the Trocadero on June 3. Air Vice-Marshal Sir W. G. H. Salmond will take the Chair and Lieut.-General Sir Arthur Lynden-Bell will be the principal guest.

The Middle-East Dinner is a re-union for those who served as officers during the War in Palestine, Salonica, Mesopotamia, Mediterranean, Egypt, East Africa, India or Aden.

Application for tickets (price 12s. 6d.) should be made to Flt. Lt. G. C. Anne, O.B.E., R.A.F. Station, Manston, Ramsgate.

The R.A.F. and Army Co-operation.

An interesting article on the R.A.F. and Army Co-operation, by Sq. Ldr. J. C. Slessor, M.C., R.A.F., appears in the April number of *The Journal of the United Service Institution of India*. The article is a reply to an article on the same subject in the October, 1925, issue of the same journal by Major R. G. Cherry, M.C., R.A.

In reply to Major Cherry's claim that Army Commanders would prefer to send up Staff Officers who know the strategical position and who at the same time have been trained to carry out observation from the air, Sq. Ldr. Slessor points out that it is not only impossible to make reliable deductions from the air but it is excessively dangerous. The R.A.F. observer is trained to report exactly what he sees. The moment he tries to draw deductions he becomes a public menace.

Sq. Ldr. Slessor agrees with Major Cherry that air information must be supplemented by and compared with information supplied by the older forms of reconnaissance. He illustrates his contention with an example from the last manœuvres, in the course of which a senior staff officer with considerable air experience did a reconnaissance in an aeroplane. His report of the situation based on the importance of what his eyes had seen, and neglecting what he had missed seeing, was so inaccurate as to have been almost fatal had it been believed against the words of the experienced Air Force observers.

Sq. Ldr. Slessor goes on to hammer home the old axiom that for everything that threatens to revolutionise war an antidote is found, the antidote to air reconnaissance being deception. At the conclusion of the article he reverts to this point and says: "Let us not come to expect too much of air observation. It is of the very greatest value, and without it an army to-day would be like a man groping in the dark, but it has its very definite limits, and it is probable that we have nearly reached them."

With regard to the medium for controlling artillery from the air, Sq. Ldr. Slessor claims that Radio-telephony is full of snags. The instruments are delicate and difficult to operate and the jamming properties are bad. Wireless telegraphy on the other hand is speedy, can be easily adapted to a code, its jamming properties are not so bad as those of R/T and its signals can be distinguished from a mass of other wireless traffic.

Discussing the seconding of army officers to army co-operation squadrons of the R.A.F., Sq. Ldr. Slessor maintains that in time of war the Army will not be able to afford to send large numbers of young officers as reserves to the Air Force, as by the time they are needed to replace Air Force casualties they may well be casualties themselves. Also, on the whole, the subaltern officer seconded from the Army does not make a better army co-operation pilot-observer than the officer from Cranwell or on the Short Service List.

He points out that the policy of the Air Force in building up in the R.A.F. Reserve a good body of pilots who had done their short-service time with army co-operation squadrons would produce a certain number of trained army co-operation pilots to replace casualties in the expeditionary force.

In conclusion Sq. Ldr. Slessor says:—"Let us remember that as fighting Services we exist for war, and that the systems we evolve to-day will have to be worked under more difficult circumstances by the far less highly trained personnel who are bound to have to succeed and reinforce us after a few months of war."

Both these articles are of very considerable value and should be read not only by officers engaged in Army Co-operation work but by all students of the Art of War.—

C. M. MCA.

The R.A.F. Memorial Fund.

The second Meeting of the year of the Executive Committee of the above Fund was held at the offices on Apr. 21. In the unavoidable absence of the Chairman, Lord Hugh Cecil, P.C., M.P., the Chair was taken by Air Marshal Sir John Salmond, K.C.B.

The Secretary informed the Committee that 1,500 copies of the Annual Report for 1925 had been duly distributed to all concerned, to the Press and kindred Societies, between the dates Feb. 20 and 28 last.

It was announced that Vanbrugh Castle School, which is maintained by the Fund for the education and up-bringing of sons of deceased airmen, was re-opened after the Easter holidays on Apr., with a complete Roll of thirty-nine boys.

A further case of application for benefit arising out of the Salt Benefaction for the education of the son of a deceased officer was considered and approved.

It was announced that the Grants Sub-Committee at their fo nightly Meetings, since the previous Meeting of the Executive Co mittee on Feb. 10, had dealt with 61 cases of appeal for assistan and that, in the same period the Secretary had dealt with 79 ca

The Meeting at its close, passed a resolution unanimously dir ing the Secretary to telegraph to the President of the Fund, H.R the Duke of York, K.G., the hearty congratulations of the Commit on the happy event of the birth of a daughter, which took place 17, Bruton Street, on the day of the Meeting, and which telegr has been very kindly acknowledged in a telegram received in re from His Royal Highness himself, conveying his own and t Duchess of York's thanks for the message.

Boxing.

At Manston, on Apr. 22, the 2nd Battalion, the Loyal Reg holders of the Army Team Championship, boxed a mat against Manston Station, the holders of the R.A.F. Tea Championship (Senior Division). An outstanding feature one of the finest programmes of boxing ever seen in t Services was the extreme physical fitness of all the co petitors. The fighting throughout was of the keenest a cleanest description. Two points were awarded to the winn in each bout and one to the loser and, as evidence of t ding-dong character of the match, the total scores after ea bout are appended—the Loyals' score being placed first each case :—1—2, 3—3, 5—4, 7—5, 8—7, 10—8, 11—10, 13— 14—13, 15—15, 17—16, 18—18, 20—19.

The final bout of the evening, which decided the issue favour of the Regiment by the margin of one point, w awarded to the old Army crack, Sjt. Haslam, after an ext round with AC. Callicott. There was never more than fraction of points between the two men and there could r have been a more sporting finish to a thoroughly sporti match.

Sir Philip Sassoon presented the prizes, which included t Challenge Cup which he has presented jointly to the Arı and R.A.F. Boxing Associations for annual competition b tween the Champion Teams of the two Services. Othe present at the ringside included Air Commodore B. C. Drew, the Revs. H. D. L. Viener and R. E. Vernon Hanso Group Capt. S. A. Hebden, Capt. Wand-Tetley (Hon. Se Army Boxing Association), Col. Hill and 15 officers of t 2nd Loyals from Gravesend, together with over 100 oth officers representative of all branches of H.M. Force Details :—

Officers' Events.—*Welter.*—Lt. J. W. E. R. Gainher beat Flg. F. Larman on points; the I.S.B.A. Champion is fast and establish a winning sequence with his long-range work.

Middle.—Lt. H. S. Thomas was too strong for his very willing a game opponent, Flg. Off. L. W. Cannon. The referee intervened the 2nd round.

Catch-weight.—Flg. Off. Chichester beat Lt. Phillips in the 2 round—this being a repetition of the previous bout with t advantage, this time, to the Air Force.

Other Ranks' Events.—*Catch-weight.*—AC. Steel, who had not be in the ring since winning a championship in 1925, beat Pte. McNi on points. Steel has lost none of his old ability to punch and w with a good margin to spare.

Cruiser-weight.—Lce./Sjt. Cook beat AC Monkley on points; t was a desperately near thing and the decision might have go either way. Monkley is a novice and should do well.

Middle.—Pte. Dykes beat AC. House on points. The loser was i in form—possibly he was over-anxious.

Welter.—AC. Page beat Pte. Harrison on points; the holder of t Air Force title took things rather easily and we missed the spark he usually puts into his work. Pte. Taylor k.o. AC. Merrick cl on time in the third round. This was one of the best fights the match with Merrick clearly leading on points up to the mome Taylor applied the closure.

Light-weight.—AC. Garratt, boxing at his very best, won a go points verdict from Pte. Kelly. AC. MacLaughlin won on poi from Pte. Gatley. This was another splendid set-to with both m taking and giving any amount of punishment; there could have be little in it at the finish. Cpl. Mitchell beat AC. MacIlwaine on poi rather easily.

Feather.—AC. Boteler, who specialises in the solar plexus k successfully applied his favourite punch during the first minu and put out Pte. O'Fee, who the Loyals regard as one of their be class boxers.

Bantam.—As noted elsewhere, this was the final and deciding bo of the match. It was one big-needle fight from gong to gong a should go down in the history of Service boxing as a classic. A Callicott, who is R.A.F. Bantam Champion, seemed to have h the better of the three first rounds, but the Judges disagre and Sjt. Haslam clearly won the extra round.

Contests.—Usually the contests form the *pièce de résistance* on the occasions, but this time they had to take second place. AC. Perr (Henlow) beat Cpl. Cromey (Beds. and Herts. R.) on points; t was a tame affair. Cpl. Davis (R. Marines) beat Cpl. Grace (Lan Fus.), after a great fight, on points. John Whiteing (aged 6 st. 6 lb.) lost on points to Cpl. Owen (6 st. 10 lb., cruiser-weig champion of the Duke of York's School) and Paddy Whitei (Schoolboy Heavy-weight Champion of Great Britain) beat Pref Sevenoaks (Duke of York's School) on points. The two Whitei boys are sons of the Officer i/c Boxing, Loyal Regt.

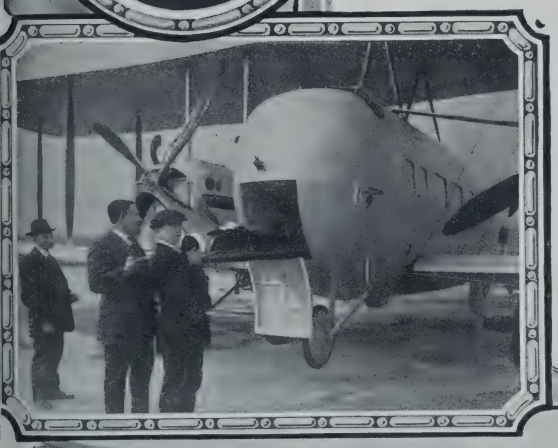
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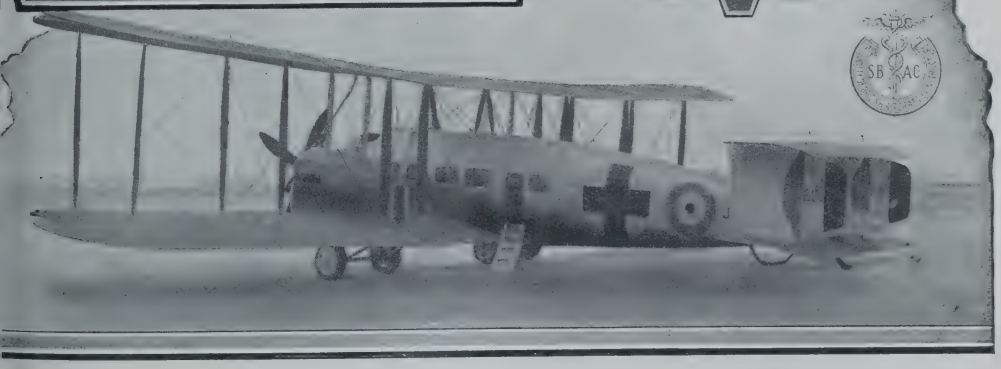
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The R.A.F. Sports at Hinaidi

The R.A.F. Inter-Unit Athletic Championships were held on Mar. 27 on the ground of the Iraq Aircraft Depot and the keenness of all Units in these contests was shown by the large number who lined the ropes.

The Acting High Commissioner (Mr. H. D. Bourdillon), Air Vice-Marshal Sir John and Lady Higgins, and a large number of guests were present.

Only two competitors started for the 100 yards open, but as S-M. Mauby, R.A.F. and C.S.M. Moore have been concerned in some very close finishes before, they came down the track practically level, but S-M. Mauby managed to get past the post a few inches in front.

The three-mile team race produced 44 starters, and it speaks well for the condition of the runners that 40 finished the arduous course. The individual winner, Cpl. Harrison, "C" Depot Sqdn., finishing the last half-lap with a brilliant sprint.

The Inter-Unit Championship Cup was won by No. 8 (B) Sqdn. with 29 points, 30 (B) Sqdn. being second with 17 points.

The prizes were graciously presented by Lady Higgins, who was herself presented with a handsome bouquet by Group Capt. C. T. MacLean, D.S.O., M.C.

Team Events.—440 Yards Relay: 1st, No. 8 (B) Sqdn.; 2nd, "A" Depot Sqdn. 880 Yards Relay: 1st, No. 8 (B) Sqdn.; 2nd, 30 (B) Sqdn. 360 Yards Hurdles: 1st, 45 (B) Sqdn.; 2nd, 6 (A.C.) Sqdn.

One Mile Relay: 1st, No. 8 (B) Sqdn.; 2nd, 70 (B) Sqdn. One Mile Team: 1st, No. 30 (B) Sqdn.; 2nd, 6 Arm. Car Co. Individual winner: Flg. Off. Guest, No. 30 (B) Sqdn. Three Mile Team: 1st, 6 Arm. Car Co.; 2nd, 8 (B) Sqdn.

Long Jump: 1st, 8 (B) Sqdn.; 2nd, 6 (A.C.) Sqdn. Individual winner: AC. Thomas, 19 ft. 5 in High Jump: 1st Air Headquarters; 2nd, 6 (A.C.) Sqdn Individual winner: L-AC. Patterson, 5 ft. 6 in. Putting-the-Shot: 1st, 8 (B) Sqdn.; 2nd, 45 (B) Sqdn. Individual winner: Flg. Off. Knox, 35 ft. 11½ in. Tug-of-War: Winners, "D" Depot Sqdn.

Individual Events.—100 Yards: 1st, S-M. Mauby; 2nd, AC. Thomas. Time, 10.4/5ths. 220 Yards: 1st, S-M Mauby; 2nd, AC. Thomas. Time, 23.3/5ths. 440 Yards: 1st, Flt. Lt. Dick; 2nd, L-AC. Self. Time, 59 secs. 120 Hurdles: 1st, L-AC. Tame, 2nd, Cpl. Edgar. Time, 19.4/5ths.

Open Events.—100 Yards: 1st, S-M. Mauby; 2nd, C.S.M. Moore. Time, 10.2/5ths. One Mile: 1st, Ram Singh; 2nd, Bargat Singh. Time, 56.3/5ths.

AIR AFFAIRS IN PARLIAMENT.

AIRSHIPS.

In the House of Commons on Mar. 31, in reply to a question by Mr. Wells, the Secretary of State for Air said that certain preliminary constructional work on the power cars and internal structures for R.101 were now proceeding. The erection of the hull could not begin until the contractors had delivered the necessary girders. The work was in hand and delivery should begin in the summer.

In reply to a further question by Mr. Wells, Sir Samuel Hoare said that he proposed to bring forward the question of airship policy for the consideration of the British Dominions at the Imperial Conference in the autumn.

SEAPLANE SERVICES TO FRENCH PORTS.

In the House of Commons on Mar. 30, in reply to a question by Sir H. Brittain, the Secretary of State for Air said that no application had been made for permission of the landing of British seaplanes in French ports as part of a regular service. Some informal discussions with the French authorities in regard to a possible seaplane service between England and France had taken place in 1922, but they had not reached the stage of concrete proposals or formal application to the French Government.

He could not answer for Imperial Airways, but he had no doubt that they constantly reviewed the possibility of developments such as this.

THE IRAQ FRONTIER RAID.

In the House of Commons on Apr. 13, in reply to a question by Lt.-Cdr. Kenworthy, by private notice, the Secretary of State for the Colonies said that a party of Syrian tribesmen had crossed the frontier between Syria and Iraq on Apr. 2 and had attacked the tribesmen on the Iraq side. A section of armoured cars had assisted the latter to repel the raiders and action had been subsequently taken by aircraft. As a result the raiders had withdrawn across the frontier into Syrian territory. It was believed that they had lost about 30 killed. The Iraqui tribesmen had lost one killed and two wounded. No British casualties had been reported.

THE R.A.F. MEDICAL BRANCH.

In the House of Commons on Apr. 13, in reply to a question by Mr. Hayes, the Secretary of State for Air said that the total cost of the headquarter medical organisation of the R.A.F., including clerical staff, was £13,026. The fullest use was made wherever possible of naval and military hospitals for Air Force patients. There were only three separate Air Force Hospitals in this country and of these, two were at stations where a large number of personnel were concentrated. The third was a small hospital of 25 beds for officers suffering from flying disabilities. Conversely the existence of Air Force Hospitals in Iraq and Palestine eliminated the need for maintaining British or Indian Army Hospitals for the Imperial and local ground forces in those countries.

The possibility of further co-ordination between the Medical Services of all Arms was kept continually under review by a joint Medical Services Committee.

CONTRACTS.

In the House of Commons on Apr. 13, in reply to a question by Mr. Hayes, the Secretary of State for Air said that the total annual cost of the Air Ministry headquarters contracts organisation was £32,835, divisible between staffs dealing with technical (£23,085) and general (£8,050) contract work. The balance of £1,700 represented payment to the Admiralty for work done for the Air Ministry.

Co-ordination between the Air Ministry Contracts Department and the Contracts Departments of the Admiralty and War Office was secured, on general questions, by means of a Contracts Co-ordinating Committee.

THE AUXILIARY AIR FORCE.

In the House of Commons on Apr. 14, in reply to a questio Mr. Thurtle, the Secretary of State for Air said that the Terri Air Squadrons were not intended for service overseas. A membe the Auxiliary Air Force could be sent on a flight starting and en at a home base, but otherwise he could not be sent out of this co unless he volunteered in writing.

[As the range of bombers is approximately 1,000 miles his obje might be Germany or Switzerland and he might be expected to back on hope.—Ed.]

R.A.F. PILOTS.

In the House of Commons on Apr. 21, in reply to a questio Colonel Day, who asked whether in view of the evidence given a inquest on the officers and men killed at Henlow, the Secr of State for Air would consider the advisability of fixing a maxi age at which a man might be allowed to act as pilot, Sir Sa Hoare said that he was advised that provided the pilot retained requisite standard of physical fitness and mental alertness there no need to lay down a maximum age limit. There was no re why the necessary physical standards should not be maintaine the end of an officer's Service life. Officers were periodically amined as to their physical fitness and unless they attained requisite standard they were not allowed to fly.

THE BRENNAN HELICOPTER.

In the House of Commons on Apr. 21, Sir Walter de Frece Mr. G. Harvey) asked the Secretary of State for Air whether Brennan has received from the Government, in connection with Brennan helicopter, any other sum beyond the £7,000 which re sents the difference between the £40,000 spent on labour, material establishment charges at the Royal Aircraft Factory, plus £7,00 salaries of the design staff, these amounts making up the sum s as the total of the expenditure on the helicopter?

Sir S. Hoare: The total expenditure upon the helicopter stated as £55,000 in my reply to my hon. Friend on Mar. 31, a assume therefore that he is now referring to the balancing figu £8,000, not £7,000 as stated in the question. This figure of £ represents approximately Mr. Brennan's salary for the seven of his employment and he received no further emoluments from Government.

Sir W. de Frece (*for* Mr. G. Harvey) asked the Secretary of for Air if the Brennan helicopter is still in the secret list; an not, are photographs of it available?

Sir S. Hoare: The patents relating to the helicopter have hitl been treated as secret and photographs are not available for pub tion. The whole question is, however, now under consideration.

"THE WAR IN THE AIR."

In the House of Commons on Apr. 22, in reply to a questio Capt. Crookshank, the Financial Secretary to the Treasury said it was hoped to publish the second volume of *The War in the* in the course of the next twelve months.

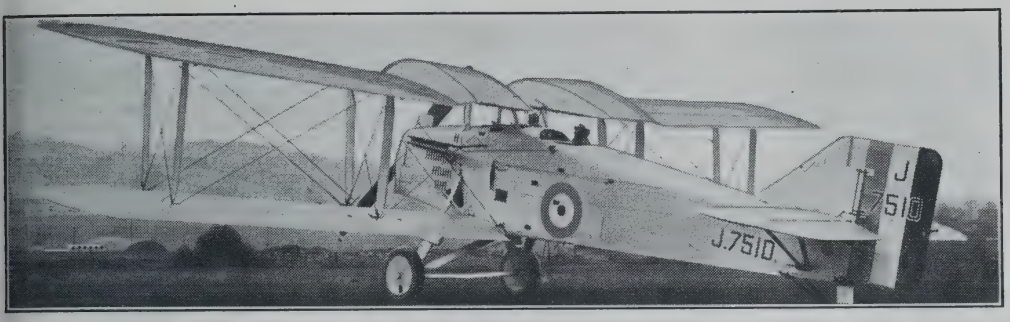
LIGHTER-THAN-AIR TROOPSHIPS.

In the House of Commons on Apr. 22, in reply to a question Cdr. Bellairs, the Financial Secretary to the War Office said the potential use of airships for the transport of troops was b closely watched, but that it would be premature at this stag airship development to express an opinion on their utility for purpose. The number of troops which could be transported w vary so considerably with circumstances such as the nature of operations and the distance involved that it was impossible to s without giving a misleading figure, how many troops one of t could carry.



"POTTERY."—On the right is the Royal Air Forc Rugby Union Challenge Cup, which was won b Henlow during the season 1925-26. On the left is th Henlow Inter-Section Cup, presented to the Station b Flt. Lt. D. Drover. Five teams are competing at Henlo for the Inter-Section Cup and the final has not yet bee played.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

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MR. BASIL JOHNSON.

The official announcement is made that Mr. Basil Johnson has been appointed Managing Director of Rolls-Royce Ltd.—to succeed his brother, Mr. Claude Johnson, who died on April 11.

The following notes have been received from one who is an old friend of Mr. Basil Johnson's and has been constantly in touch with him for many years past, both in this country and abroad :—

Mr. Basil Johnson, the newly-appointed Managing Director of Rolls-Royce, Limited, is a man of 51, with an exceptionally wide experience and a broad outlook upon life.

In addition to his duties as General Manager of Rolls-Royce Ltd. Mr. Johnson has for some time past acted as an alternative Director in the absence of the late Managing Director. He is also a Director of Rolls-Royce of America Inc., which has made such progress in recent years.

None is more capable of carrying on the great traditions and policies of the Rolls-Royce Company than he. For many years past he had been in close daily contact with the late Mr. Claude Johnson, discussing all matters of interest and importance, sharing many of the responsibilities of control, and at times carrying on the entire management of the Company in the absence of his brother, when the latter was either in America or at one of the European branches.

In the early days of motoring, Mr. Basil Johnson became an automobile enthusiast, and in the year 1896 acted as Superintendent of the first Motor-car Exhibition organised in London. This was held at the Imperial Institute, where he was first associated in working with his brother, the late Mr. Claude Johnson.

Subsequently Mr. Basil Johnson spent some years in the Merchant Service, on the Union Castle Company's ships running between Europe and South Africa. Then settling in South Africa with Mr. Pauling, the great Railway Contractor, he assisted in the construction of many railways in that country, including the Cape to Cairo line which passed through Rhodesia, where he came much in contact with the late Mr. Cecil Rhodes.

During the Boer War Mr. Basil Johnson was engaged in railway transport work, and during his subsequent years at the Cape he assisted in the development of motor transport in Africa.



THE NEW CHIEF.—Mr. Basil Johnson, who has been appointed Managing Director of Rolls-Royce Ltd.

Convinced of the immense future for the petrol motor, M Basil Johnson returned to England in 1904, and joined t Napier firm. Remaining with them for ten years, he becar well known as the Manager of their Sales organisation home and abroad. Probably no man has a wider or mo practical knowledge of Overseas conditions. Mr. Basil Joh son has motored extensively in South Africa, the Argentir Brazil, Canada, India, Russia, Roumania, and most Europe, as well as in many of the more remote parts of t world. His numerous voyages have taken him across t Equator thirty-two times.

He drove one of the Napier Gordon-Bennett racing ca in the first competition held in India, from Delhi to Bomb (a distance of 900 miles), and was one of the very few drive who successfully completed the course.

Shortly before the great European War, Mr. Basil Johns joined Rolls-Royce, Ltd., Soon after the outbreak of hosti ties he joined the Royal Naval Air Service, and was appointe Commanding Officer of the great Central Aircraft Supp Depôt at the White City, where he had a "crew" of abo 1,000 ratings and a staff of 45 Commissioned Officers.

After some two years at the White City, Mr. Basil Johns was released by the Admiralty in order that he might tal over the control of the Rolls-Royce Company during t twelve-months' absence of his brother, the late Mr. Clau Johnson, who was then engaged in the organisation of aer engine supplies in the United States.

Since that time, as General Manager, he has taken a pron nent part and has shared with the late Managing Direct the responsibilities of the organisation of this great enterpris and the manufacture and sales of its world-renowned product

Mr. Basil Johnson retains the enthusiasm of youth both his work and in his recreations. If possible, he is of even more modest and retiring disposition than his late brothe and has always avoided publicity in any shape or form. I is interested in many kinds of sport and takes an active pa in sailing, hockey, tennis, golf and skating.

ROYAL AERO CLUB NEWS.

A Meeting of the Committee was held on Thursday, Apr. 22.

The following new members were elected :—William Thomson Ha Flt. Lt. Matthew Alistair Simpson, Archer Statham White, John Jac Hofer, Cecil Walter Langlands, George Frederick Wanklyn Cobbol Kenneth Vernon Wright, Flt Lt. Donald William Clappen, Fra Samuel Gaylor, Gordon Percy Olley, The Hon. Ralph Alexand Cochrane, John Alfred Lincoln, Flg. Off. William Henry Stiles, F Off. Maurice Brunton, George Gordon Kent, Samuel Clement Tuck

The following Aviators' Certificates were granted :—7985, Ral England Hawkins, Apr. 15, 1923; 7986, Cyril Comyn Musselwhi Apr. 28, 1923; 7987, Percy Fraser Clarke, Mar. 30, 1926; 7988, Fran Henry Kennedy, Dec. 3, 1924; 7989, William Thomson Hay, Apr. 1926; 7990, Bernard Henry Smith, Apr. 1, 1926; 7991, Reginald Rob Williams, Apr. 5, 1926; 7992, Sydney Alfred Crabtree, Apr. 5, 19 7993, Haliburton Hume Leech, Apr. 10, 1926.

The Stewards of the Royal Aero Club for the year 1926 were elect as follows :—Brig.-Gen. The Duke of Atholl, K.T., G.C.V.O., C. D.S.O., The Rt. Hon. The Lord Hugh Cecil, M.P., Brig.-Gen. Sir Car Holden, K.C.B., F.R.S., Lieut.-Col. J. T. C. Moore-Brabazon, M. M.P., Admiral of the Fleet The Rt. Hon. Sir Edward Seymour, G.C. O.M

The following Sub-Committees were elected :—

House.—Ernest C. Bucknall, Major Herbert J. Gorin, F. P. Dickso E. J. B. How, D. C. MacLachlan, J. Stewart Mallam, Capt. L. Pearkes, Major S. V. Sippe, D.S.O.

Finance.—Ernest C. Bucknall, Lieut.-Col. M. O. Darby, J. Stewa Mallam, F. Handley Page, C.B.E.

Flying Services' Fund.—Lieut.-Col. Alan Dore, D.S.O., Chester Fo D. C. MacLachlan, Wing Cdr. T. O'B. Hubbard, M.C., A.F.C.

Racing.—Air Vice-Marshal Sir W. S. Brancker, K.C.B., Lieut.-C W. A. Bristow, A. S. Butler, Capt. R. J. Goodman Crouch, Lieut.-C M. O. Darby, Lord Edward A. Grosvenor, Major H. Hemming, Maj R. H. Mayo, Howard T. Wright, Capt. C. B. Wilson, M.C.

Technical.—Major T. M. Barlow, Major J. S. Buchanan, O.B.E W. O Manning, Major R. H. Mayo, Lieut.-Col. M. O'Gorman, C.B Lieut.-Col. H. W. S. Outram, C.B.E., Wing Cdr. T. S. Rippon, C.B.E Sq. Ldr. M. E. A. Wright, A.F.C.

Joint Standing Committee (R.Ae.C. and S.B.A.C.).—Lieut.-Col. F. McClean, A.F.C., Air Vice-Marshal Sir W S. Brancker, K.C.B., Lo Edward A. Grosvenor, Capt. C. B. Wilson, M.C.

The Airship Club.—The arrangements entered into with the Ai ship Club for the use of 3, Clifford Street, as registered address ar for the Secretarial work, were reported and confirmed.

The Light Aeroplane Competition, 1926.—The reports of the Mee ings of the Joint Committee of the Club, Air Ministry and Socie of British Aircraft Constructors were received and confirmed and th Regulations approved.

The Light Aeroplane Clubs.—The applications from the Londo Lancashire and Newcastle Aero Clubs for a grant from the Fur placed at the disposal of the Royal Aero Club by the Petroleum Di tributors' Committee were considered. A modification in the term of the gift having been agreed to by the Petroleum Distributors' Com mittee, it was decided to make the following grants :—The Londo Aeroplane Club, £200; the Lancashire Aero Club, £200; the Newcastl upon-Tyne Aero Club, £200.

The Bristol Jupiter Endurance Test.—It was decided to issue Royal Aero Club Certificate of Performance to the Bristol Aer plane Company Ltd. in connection with the endurance test of th Bristol Jupiter carried out under the supervision of the A.I.D.

Honorary Membership.—Capt. William G. Watts, U.S.N., was electe a Temporary Honorary Member of the Club on his taking ove duties of Naval Attaché at the American Embassy.

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SUPERMARINE

ENGLAND.

WEATHER AND CIVIL FLYING.

The following letter from Mr. Cobham will be found of considerable interest :—

Sir,—With reference your report of my few words at the Aero Club House Dinner on Apr. 14. It is evident that on one or two points I did not make myself clear, or that you failed to understand my meaning. I am referring chiefly to the bad weather question in Europe.

I was speaking generally, and looking at matters from a broad view. When I say that Europe is one of the worst districts in the whole World in which to carry out successful commercial flying, I think I am correct, because, although there may be other regions in the World where the weather is even worse than Europe, those places perhaps are of no consequence, such as the Aleutian Islands in the Pacific, etc.

Europe generally is bad for flying, and I maintain that for prolonged bad weather conditions North-West Europe is the worst part of Europe. It is true that one can meet with dense fogs at Venice, bad storms off Crete, violent snowstorms in Roumania, terrible weather in the Pyrenees and terrific bumps on many parts of the Mediterranean Coast. But all these conditions are spasmodic, and in each of these places there is more good flying weather than bad flying weather.

The sun shines in Italy continually as it never does in N.W. Europe. The visibility in Spain is generally such as we never get it in the British Isles, and there are many times more clear days in Venice than there ever are between London and Paris.

I still maintain that although in various parts of the World we may have violent weather conditions adverse to flying, N.W. Europe gives a longer record of bad visibility flying conditions than any other part of the populated World. I maintain that, whereas the Imperial Airway Co., with the aid of one of the most experienced staff of cross-country pilots in the World, keep a regularity of about 80 to 90 per cent. efficiency, this same staff would maintain with ease a regularity of 100 per cent. efficiency in such places as South Africa, Australia, Egypt, Iraq, India and many other pa of the Empire.

I disagree with you regarding the Cape Town—Durban periment, because despite their bad weather they maintai 100 per cent. efficiency, and it must be remembered that Americans and Major Zanni and others flew through In and Burma in the Monsoon period.

One agrees partly with the dictum of the late General David Henderson, who said, in the very earliest days of flyi that our uncertain weather and our small enclosed fields wo force British Aviation to produce the best aircraft and best pilots in the World. That may be true up to a poi But if you have too much bad weather, and have no land facilities, there is little to encourage the would-be aviat So the very things which General Sir David Henderson s would force British Aviation to produce the best stuff may we are not careful, and work sufficient propaganda, kill altogether.

I am convinced that if we had continual fine weather the British Isles, and if it were possible to land almost a where without danger or difficulty, the whole Youth Britain would be flying about the countryside.

(Signed) Alan J. Cobham

[*But*, if we had continual fine weather the Youth of Brit would be as futile as Dagoes.—C. G. G.]

COPENHAGEN—TOKYO.

On Apr. 23, Lieut. Botved of the Danish Army, who attempting to fly from Copenhagen to Tokyo, arrived Shanghai from Ninghai (Chekiang) where he had been for to land while flying from Canton.

The cause of his landing was a leak in the petrol tank.

Ninghai is a notorious resort of Chinese pirates and two aviators experienced an unpleasant time there.

The Chinese stole all their loose personal belongings the machine spare parts, even, according to *Reuter*, deflat their tyres as a last effort to "lift" everything movable

When they arrived at Shanghai the crew of the mach were in a very unkempt state, not having had a wash, sha or change of clothing for five days.





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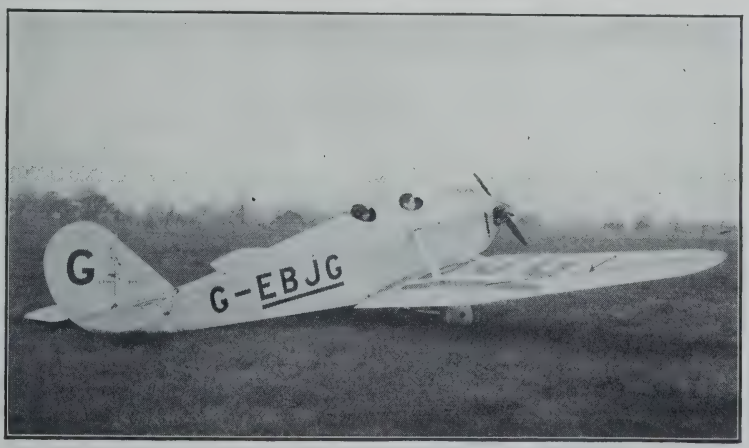
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THE FLYING CLUBS.

The London Aeroplane Club.

The flying time for the week ending Sunday, Apr. 25, was 21 hrs. 30 mins. The following members had flying instruction:—Miss O'Brien, Sir John Rhodes, Bart., A. Lees, R. C. Presland, N. J. Hulbert, E. D. Moss, R. J. Bevington, S. J. Hofer, G. Wallcousins, D. Hamilton, J. Barros, A. Southgate, J. H. Simson, O. J. Tapper, H. Solomon, E. K. Blyth, A. P. Hunt, J. Eady, L. J. C. Mitchell, R. L. Hare, E. P. Brough, J. S. M. Michie, F. Adams.

The following members flew solo:—Sq. Ldr. M. E. A. Wright, Major K. M. Beaumont, J. S. M. Michie, E. P. Brough, A. P. Hunt.

The D.H. Moth G-EBMF, which has been purchased by the Club, was delivered on Saturday last, and for the first time since January the Club had two machines available. This enabled five members to do solo flying on that day.

The third D.H. Moth should be taken over during this week.

The following donations have been received towards the purchase of G-EBMF:—O. J. Mastrand, £1; J. G. Day, £2 2s.; B. B. Tucker, £1; T. C. Sharwood, £2. Total to date, £703 5s.

The Lancashire Aero Club.

Flying report for the week ending Sunday, Apr. 25:—Dual instruction with Mr. T. Neville Stack:—Messrs. Abdulla 2 hrs. 10 mins., A. Benson 1 hr. 25 mins., H. Hardy 1 hr. 15 mins., A. MacNair 1 hr. 5 mins., C. Agar 55 mins., Wade 55 mins., G. Slater 50 mins., Davidson 45 mins., S. Brown 40 mins., R. R. Williams 35 mins., Jowett 35 mins., Casta 30 mins., Braid 30 mins., Anderson 30 mins., A. Goodyear 25 mins., E. Steele 20 mins., H. S. Stern 20 mins., Jackson 20 mins., S Crabtree 15 mins., Menzies 15 mins., Crosthwaite 15 mins., F. Gatterall 20 mins., Proctor 20 mins., Lilley 10 mins.

With Mr. J. C. Cantrill:—Messrs. A. Benson 55 mins., H. S. Stern 30 mins., Lilley 30 mins., H. Hardy 25 mins., A. Goodyear 20 mins.

With Mr. J. J. Scholes:—Messrs. F. Gatterall 35 mins., C. Agar 25 mins., P. Michelson 10 mins., Casta 10 mins.

Solo flights were made by Messrs. C. G. S. Parker 2 hrs. 35 mins., M. Lacayo 55 mins., A. Goodfellow 30 mins., J. Wilkinson 30 mins., C. Slater 20 mins., A. Macnair 10 mins.

During the week G. A. S. Parker did the necessary tests for his "A" Licence and Messrs. A. Macnair and C. Slater did their first solos.

Mr. Davidson, who has been secretly tuning the L.P.W.'s Douglas engine, intends during the next week or so to unearth the machine from the wreckage of the old hangar and install the super-hotted results of his labours.

Reports from the stable indicate that this engine has not previously shown its true form, but is now fit and well and should prove a winner. In which case Mr. Goodfellow will have an opportunity of fulfilling his frequently expressed intention of "flying the damned thing." Should he really leave the deck it is confidently expected that after one glorious circuit the old 'bus will disintegrate itself in a cloud of dust, dropping the pilot neatly in the middle of the pond.

Mr. Goodfellow will be the first to realise that this should prove vastly amusing without being vulgar.

The Newcastle-upon-Tyne Aero Club.

Flying report for week ending Apr. 25:—LX 21 hrs. 40 mins., LY 9 hrs. 10 mins. Total 36 hrs. 50 mins., made up as follows:—Dual with Major Packman 17 hrs. 10 mins. Soli 6 hrs. Passenger flights 6 hrs. 55 mins. Tests (6) 45 mins.

Though the weather has been very unsettled it has been possible to maintain a good average, through having two machines on service again. A further record was made on Sunday when the total for the day was 8 hrs. 35 mins. During the week the Club passed the 500 hours' flying time mark.

The following members had instruction:—Mrs. Marcks, Miss Leathart, Messrs. George, McGuinness, Edwards, Bainbridge, Meisegaes, Thirlwell, B. I. Sutherland, P. F. Heppell (secondary dual), L. Smith, Twine, C. Thompson, Shaw, Bruce, J. Bell, J. G. Edmundson, A. Bell.

The following pilot members flew with passengers whose names are given:—Mr. Baxter Ellis with Mrs. Dodds, Mr. and Mrs. Urwin, Miss Stafford; Mr. Sutherland and Mr. Bulmer; Mr. R. N. Thompson with Miss Baker, Miss Thompson, and Mr. Lawson; Mr. N. S. Todd with Mr. Bell; Mr. R. M. Stobie with Miss W. Urwin, Miss M. Bowran, Miss A. Scott.

Major Packman flew with the following passengers:—Mr. E. Wingle, Mr. H. Carruthers, Mr. Shaftlise, Mr. Moberley, Miss Parkin, Mr. Pattle, Mr. Hughes, Mr. Beattey, Mr. Robson, Mr. and Mrs. Wedderburn, Mr. and Mrs. Urwin, Miss Snowball, Miss Dotchin, Miss Middleton, and Master Middleton. Mrs. Wedderburn flew last week but her name was inadvertently omitted from the list given.

Over two hours' was flown on the Gull, Mr. Ellis, Mr. Heppell and Major Packman flying at different times. Mr. Heppell attempted to break the existing height record (since the machine came North) of 900 feet, on Wednesday, but the barograph did not function properly. Major Packman reached 2,000 feet on Saturday. It appears that this will be difficult to beat, but it is known that the machine has been flown at 3,000 feet by Mr. Lankaster-Parker. [Mr. Parker's weight is probably some 50 lbs. ligh than Major Packman's and he flew the machine in the first flush her youth and energy. Major Packman's performance is excellent c. G. G.]

MADRID—MANILA.

On Apr. 21, Capts. Gallarza and Loriga of the Spanish Arm who are attempting to fly from Madrid to the Philippi Islands on two Breguet XIX biplanes (450 h.p. Lorrain Dietrich engines) arrived at Rangoon from Calcutta.

On Apr. 22 they flew from Rangoon to Bangkok.

Capt. Estevez and his mechanic, who were forced to la while flying from Cairo to Baghdad, and were found by pil of the R.A.F. after being missing for several days, ha been recalled to Spain as it is thought that they would unfit to continue after their exposure in the desert.

THE BUENOS AIRES—MONTEVIDEO AIR LINE.

A report has been received stating that the air route fr Buenos Aires to Montevideo which was opened on Mar. 1926, by the Junkers Mission at Buenos Aires, is bei operated three times a week with Junkers type F.13 s planes.

Since the inauguration of this route, 100 per cent. regular has been attained and the passenger traffic is so great th seats have to be booked weeks in advance.

The new line which is being supported by the Ministr of Posts of the Argentine and Uruguay, is again another pr that the Governments of South American republics are fu convinced of the great importance of aeroplanes, for the c veyance of passengers and mails.

PERSONAL NOTICES.

DEATHS.

MILLS.—ON Apr. 22, as the result of an accident while serving H.M.S. *Hermes*, at Malta, AC. Henry F. Mills, R.A.F.

MARRIAGES.

DOWDING—WILSON.—On Apr. 24, at Ranmoor, Sheffield, by Right Rev. the Lord Bishop of Sheffield, Kenneth Townley, young son of Mr. and Mrs. A. J. C. Dowding, of 65, Wimbledon P London, S.W., to Kathleen Marjorie Kinsford, youngest daughter the late Mr. J. K. Wilson and of Mrs. Wilson, Snaithing Bro Ranmoor, Sheffield.

KING—WOOD.—On Apr. 17, at Sleaford, Flg. Off. H. E. King, R.A son of the late Arthur Hill King, Esq., Folkestone, to Violet Dorot Wood, daughter of the late Major Percy Wood, late Yorks and La Regt., and granddaughter of the late John Turnly, Esq., J.P., D Drummasole, Co. Antrim

FORTHCOMING MARRIAGE.

PRITCHARD-BARRETT—RANSOM.—The engagement is announ between Mr. "Mike" Pritchard-Barrett, R.A.F., second son of late John Pritchard-Barrett and of the late Lady Gunter, and step- of the late Colonel Sir Neville Gunter, Bt., of Wetherby Gra Yorks, and Winifred Mary, third daughter of Mr. and Mrs. D'Oy Ransom, of Nomanton Manor House, Plumtree, Notts.

BIRTHS.

BAKER.—On Apr. 20, to Sq. Ldr. and Mrs. G. B. A. Baker, of L Crendon, near Thame—a daughter.

CHARLEY.—On Apr. 22, at Cleeve Lodge, Eastcote, Middlesex, Winifred, wife of Capt. L. W. Charley, O.B.E., of the Gloucestersh Aircraft Co. Ltd.—a son.

HANMER.—On Apr. 23, at 21, Halsey Street, S.W.3, the wife Flt. Lt. R. H. Hanmer, M.C.—a son.



AT NEWCASTLE.—Mr. Heppell in the Gnosspelius Gull.

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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 19; Tuesday, 20; Wednesday, 16; Thursday, ; Friday, 11; Saturday, 13; Sunday, 2.

IPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London —Rotterdam—Amsterdam—Berlin: Machines 48, passengers 264, freight 13 tons.

R UNION:

Paris—London: Machines 23, passengers 144, freight 11 tons.

L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 32, freight 3½ tons.

ECIAL: Nil.

Total number of trips by British Machines, 48, carrying 264 passengers. Foreign Machines, 35, carrying 204 passengers.

mparative Figures:

eek ending Apr. 25:

Machines, 83; Passengers, 440; Crews, 111; Total personnel, 551.

rresponding week, 1925:

Machines, 122; Passengers, 383; Crews, 154; Total personnel, 537.

rresponding week, 1924:

Machines, 45; Passengers, 196; Crews, 72; Total personnel, 268.

rresponding week, 1923:

Machines, 83; Passengers, 371; Crews, 131; Total personnel, 502.

rresponding week, 1922:

Machines, 104; Passengers, 193; Crews, 134; Total personnel, 327.

rresponding week, 1921:

Machines, 52; Passengers, 206; Crews, 66; Total personnel, 272.

rresponding week, 1920:

Machines, 44; Passengers, 44; Crews, 46; Total personnel, 90.

Croydon Notes.

Passengers and freight are rolling in at Croydon in large antities and it looks as though we are in for a record year Civil Aviation.

The new buildings on the East side of the aerodrome are ogressing rapidly and some of them look like being ready r occupation by the end of the summer.

On Saturday, a few members of the Savoy Orpheans arrived the aerodrome in the morning in full evening dress. They re taken for a flight in a D.H.50 with Mr. Hinchliffe, just blow the cobwebs away.

Mr. Hubert Broad was to be seen in the rôle of passenger st week. He went over in a W.10 to Paris and came back a Goliath, and seemed quite to enjoy it.

The new K.L.M. Fokker-Jupiter is doing really good times: cluding a stop at Rotterdam it usually seems to put up a icker average than all the other non-stop machines. This rt of competition is a splendid thing.

Mr. Dudley Travers, who recently acquired a D.H.9 for taxi rposes, hoped to start to-day (Wednesday) on another trip. e will have as a passenger Mr. E. Price Hallowes, who presents Heidsieck Champagne in this country. They ex- ct to leave early in the morning, and, stopping at Le ourgêt and Lyon, they hope to arrive at their destination mo, in the evening. Mr. Travers has already done several ig trips across Europe without shouting about it, and this ergy and enterprise is noteworthy.

A.D.C. Aircraft Ltd. are busy in the sheds and in the air d an item of distinct interest should be ready next ek.—G. D.

Brooklands Notes.

Last month ended badly by Mr. John Cobb crashing his ivate Avro. This was caused by a stall following engine ublc. Mr. Cobb was unhurt and the damage to the achine is not serious and should soon be repaired.

Also on the casualty list is Mr. Dudley Watt's Sopwith asshopper. This machine unfortunately broke a longeron Swindon. It is, however, expected at Brooklands shortly be seen flying again. It is rumoured that Mr. Watt has rchased the Sopwith Swallow monoplane, erstwhile "The ooter," which was Mr. Harry Hawker's runabout.

Mr. Preston's B.E. has done several short flights during the month. Mr. Preston has purchased another B.E. for spares for his machine. He is still open to offers for the machine.

Mr. G. Maddocks, Coldstream Guards, has also bought a machine, a Nieuport Nighthawk, which he proposes to have altered for his private use.

The A.N.E.C. III has been tested and is now on its way to Australia.

Mr. Leslie Hamilton with his Vickers Vulcan is paying another visit abroad.

Hawkers and Vickers have been doing much testing.

The Southern Counties Aviation Co. Ltd. are reconditioning a Sopwith Gnu.

The Royal Aeronautical Society.

OFFICIAL NOTICES:—The title of Lt.-Colonel Richmond's lecture has been changed to "A Review of the present position with regard to Airship Research and Experiment." The lecture will take place in the Library at 7, Albemarle Street, W.1, at 6.30 p.m. on Thursday, Apr. 29, 1926.

WILBUR WRIGHT MEMORIAL LECTURE:—The title of the Wilbur Wright Memorial Lecture which is to be delivered by Mr. F. W. Lanchester, Honorary Fellow, at 6.30 p.m. in the Library at 7, Albermarle Street, W.1, on Thursday, May 27, 1926, is "Sustentation in Flight." The Gold Medal which has been awarded to Mr. Lanchester by the Royal Aeronautical Society will be presented to him at this meeting.

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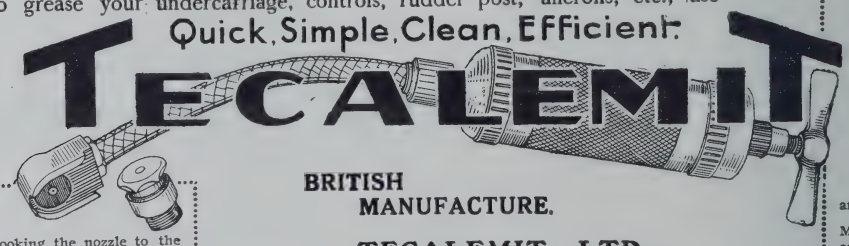
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THE AEROPLANE

Vol. XXX. No. 18.

Edited by C. G GREY. May 4, 1926.

Owing to the present lamentable State of Emergency caused the strike of transport workers and associated Unions in pathy with the dispute in the coal trade THE AEROPLANE dated 5 cannot be produced. The paper went to Press in the usual on Tuesday, May 4, and is all ready for printing whenever the ie Unions see fit to allow the actual operators of the print- machines to return to work.

One may say that there is no ill feeling whatever between AEROPLANE newspaper and those who print it. For over four- n years THE AEROPLANE has been printed by Bonner & Company throughout that time the greatest good will has existed be- en the Proprietors and the editorial staff of the paper on the hand and the linotype operators, the compositors, the machine in and everybody else in the printing works on the other hand. one hopes that when this unfortunate dispute, in which none is are personally interested, comes to an end THE AEROPLANE l be produced under similar happy circumstances.

In order not to break the continuity of the issue of THE PLANE, which is now approaching the completion of its fifteenth , this highly compressed version is being issued.

As a matter of fact there is very little news to publish at moment. The issue which is ready for printing consists st entirely of technical matter, much of it of considerable e, but none of a kind which can be compressed into such a ication as this. However, such news as there is will be d in its most compressed form in this leaflet.— C.G.G.

THE RETURN OF THE PRINCE OF WALES.

No better demonstration of the usefulness of aircraft in an gency can be imagined than the return of the Prince of Wales ngland by air on May 4. The fact has been duly broadcast by lless and has been recorded in type by "The Times" in its nature issue of May 5. The fact that the heir to the Throne ld trust himself to the normal air transport service when he t so easily have made the journey by special boat, say a royer supplied by the Royal Navy, should assuredly stand forth arking an historical moment in the progress of Civil Aviation.

The Prince has always been keen on flying, and during the e flew a great deal, causing much anxiety to those who were ged with assuring his safety. But since the end of the War -18 he has not flown at all, as it was evidently considered flying was not a sufficiently safe method of transport for n whose life so much depends. It is therefore the more rthy that in this time of national crisis he should thus nstrate not only his faith in the safety of flying but also elief in the ability of Imperial Airways to take him to his nation in the quickest possible time.

It is worth while recording for historical purposes that .F. Jones had the honour of piloting the Prince of Wales hat the machine was a Handley Page W.10. with two Napier engines. The Prince was accompanied by General Trotter, rivate Secretary, and Wing Commander J.R.W. Smyth-Pigott, ., our Air Attaché in Paris, and by three members of his . During a considerable portion of the journey the Prince n the front seat alongside the pilot.

This is certainly the first occasion on which the heir to e Throne has crossed the Channel by air.

AIR TRANSPORT IN THE EMERGENCY.

Although the order of the Trades Union Council that all transport workers should go out on strike referred specifically to air transport as well as land and sea transport, the personnel of all grades of Imperial Airways have remained loyal to their chiefs up to the time of issuing this leaflet. It may be that when it appears the ground staff may have been forced, by picket- ing or by pressure of the other Unions, to desert their posts, but one hopes that they will remain loyal till a normal state of affairs is resumed. In any case all grades deserve thanks for thus demonstrating their allegiance.

The first day of the strike was certainly a record day for Imperial Airways. The machine on which the Prince of Wales flew from Paris had arrived at Croydon from Cologne that morning and had flown from Croydon to Paris before midday. Two other W.10s. and a Vulcan also did the Paris and back journey during the day, each of them carrying its full complement of passengers.

On Wednesday three W.10s. and a D.H.50. made the Paris trip again, each loaded to capacity.

Lieut-Colonel Minchin made a remarkable trip in a D.H.50. on Tuesday, May 4. Leaving Croydon in the morning he flew to Dublin with a passenger who had urgent affairs there. He left Dublin at about 18.10 hours in the evening and arrived at Croydon at 21.40 hours. Three-and-a-half hours from Dublin to London must be about a record for the journey. By normal methods of transport that is about the duration of the sea trip alone. One gathers that although he was flying an "Imperial" machine Col. Minchin was remarkably well received by the officers of the Free State Air Force at Baldonnel Aerodrome.

All being well Imperial Airways should easily break all previous records during this and succeeding weeks.

THE LIBRARY OF THE UNIVERSITY OF ILLINOIS

AIDING THE PRESS.

The London Aeroplane Club did a valuable piece of work on Tuesday and Wednesday. On Tuesday afternoon the Daily Mail, whose employees in London had made production impossible, tele- phoned to the Royal Aero Club at 16.15 hours saying that one of their Directors wanted to get to Manchester that evening.

Arrangements were promptly made with the London Aeroplane Club at Stag Lane, and at 17.25 hours "The Daily Mail" Director arrived there. At 17.30 he left on a D.H. Moth (Cirrus engine) with Mr. G.T. Witcomb as pilot. They arrived at Woodford Aero- drome at 19.30 hours, a wonderfully fast trip for such a small machine. The Director duly reached Manchester by car shortly afterwards.

On Wednesday morning Mr. Witcomb left Woodford carrying half-a-dozen parcels of the leaflet produced by "The Daily Mail" in Manchester and known as "The Manchester Daily Mail". Some of these parcels were dropped overboard, without alighting, at various pre-arranged towns en route, and Mr. Witcomb was back in London by noon on Wednesday still carrying a goodly parcel of "Manchester Daily Mails" for those in London who were lucky enough to get hold of them. The parcels were dropped at Stoke-on-Trent, Macclesfield and Lichfield.

A NEW FAIREY MACHINE.

A machine which is causing a good deal of interest in the Royal Air Force at the moment is the Fairey Firefly, a single- seat fighter with a Curtiss D.12. engine somewhat on the lines of the Fairey Fox. It is supposed to be a deadly secret at the moment but as some thousands of people have seen it fly and many people are talking about it there seems no reason for maintaining that secrecy. Naturally one does not publish its performance figures, but one can say that they mark a distinct advance on the speed of any single-seat fighter in the posses- sion of the R.A.F. at the moment.

THE THREE ENGINED FOKKER.

The three-engined Fokker monoplane ordered by the Air Ministry for experimental purposes was delivered on Friday, April 30, at the Experimental Station at Martlesham Heath. The machine left Schiphol Aerodrome at Amsterdam at 11.15 hours and arrived at Martlesham at 13.55 hours. Even allowing for a favouring wind the machine must be fairly fast. The air line timetables allow three-and-a-half hours for the Amsterdam-Croydon journey, which is about thirty miles less than the distance from Amsterdam to Martlesham. The pilot of the machine was the Fokker chief pilot, Mr. B. Grasé, and he was accompanied by Mr. B. Stephan, the Managing Director of the Fokker Works.

Before landing at Martlesham Mr. Grasé made a number of manœuvres to show the manœuvrability of the machine. After doing sundry sideslips and Immelmann turns he ended by doing a complete loop. Those who were watching the arrival were somewhat amazed by this performance.

After the machine had landed Messrs. Stephan and Grasé stepped out clad in ordinary summer clothing instead of the usual flying suits and helmets. In this new type of Fokker the pilots' seats are fully protected against the weather and so no special flying suits are needed. One imagines that this will make the machine popular among air line pilots.

ADVERTISEMENTS.

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MR. GARDNER'S AIR TOUR.

Mr. Lester D. Gardner, the Editor of "Aviation", New York, who is bent on covering every air route in Europe, has now covered something like 4,000 miles. He started by flying from London to Paris in an Imperial Airways W.10. machine with Mrs. Gardner, and returned alone a day or two later by an Air Union Goliath. Then he flew from London to Cologne by Imperial Airways W.10. and thence to Paris by a French line. From Paris he flew to Amsterdam with Mrs. Gardner in a three-engined Koolhoven monoplane belonging to the K.L.M. Thence he and Mrs. Gardner flew to Berlin in a German machine. Some days later Mr. Gardner, flying alone, left Berlin by air after lunch, dined in Copenhagen, left Copenhagen after breakfast in the morning, lunched at Hamburg and arrived in London for dinner on a K.L.M. Fokker. Next morning in another K.L.M. Fokker he flew to Rotterdam and thence by way of Essen to Berlin in a German machine. From Berlin he and Mrs. Gardner flew to Lake Constance and at the time of writing they are having a few days holiday in Switzerland before resuming their air travels.

By the time he has fulfilled his ambition to fly over all the air lines of Europe Mr. Gardner ought to know more about un-Commercial Aviation than any man living.

A YEOVIL APPOINTMENT.

Captain G.T.R. Hill, who has become World-famous as the designer, constructor and pilot of the first really successful tail-less aeroplane, has joined the staff of the Westland Aircraft Works at Yeovil. Capt. Hill's experience as a pilot and his undoubted ability as an engineer, both aerodynamical and constructional, should be of great value to the Westland company. One hopes that his advent will bring good fortune to the firm which, though it has turned out admirable work ever since it first came into existence, has not yet had the luck to have any of its own designs adopted as standard equipment for the R.A.F.

RAPID TRANSPORT.

If any readers of THE AEROPLANE come across anybody who is really in urgent need of rapid transport across country he or she will do well to remember that the various joy-ride concerns are always ready to provide machines for the purpose.

The Berkshire Aviation Tours, whose headquarters are at Witney Aerodrome, Oxford, have a number of three-seater Avros which can no doubt be hired for special journeys when required.

The de Havilland Company, having sold all their D.H.50s., have more or less allowed their Hire Service to fade out during the past year or so. But in case anybody wants machines for special trips their various school machines are available. These consist of a number of two-seater D.H.9s. with Puma engines and two-seater Moths with Cirrus engines.

OUR ADVERTISERS.

As this "issue" of THE AEROPLANE will go abroad just as if it were one of our regular numbers a large portion of the available space has been allotted, as usual, to advertising.

The advertisements which appear herewith are those of the firms whose advertisements would have appeared in the real issue bearing this number and date and they are arranged in the order in which they would have appeared in that issue.

One hopes most sincerely that by next week all parties concerned in this unfortunate dispute will have come to their senses and that we may be able to return to the ordinary full-grown numbers of THE AEROPLANE. But if we do not we propose somehow to produce another potted AEROPLANE of this kind.

THE "Bristol" AEROPLANE CO., LTD.,
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Published by AERONAUTICS LTD. at 14, Bream's Buildings, E.C.4.

THE AEROPLANE

Vol. XXX. No. 19.

Edited by C.G.GREY. May 12, 1926.

ON THE STATE OF EMERGENCY.

On the whole the Aircraft Industry seems to be carrying on very well in the present emergency. In the ordinary sense of the word practically none of the aircraft workers in the factories have gone on strike. A certain percentage of them left their work on Tuesday, May 4, because they were called out by their Unions. And even of those who went out the great majority were sorry to go. They were all well paid men, as pay goes in these days, and were glad to be in jobs after these seven lean years since the War 1914-18.

Judging by the aircraft factories in the London district, on the average about fifty per cent. of the men were out at the end of last week. The Fairey Company reported sixty per cent. of their men still at work and the Hawker Company about fifty-five per cent. Allowing for the fact that a good many of the men were out more because of the difficulty of getting to their work than anything else, this must be considered quite satisfactory from the point of view of law, order and decency and eminently unsatisfactory from the point of view of the Trades Union Council.

Naturally the majority of the men who were at work were non-Union men. But a large proportion of Union men remained at work because they took the eminently sensible view that the T.U.C. had acted contrary to their agreement in calling a lightning strike instead of giving the usual full week's notice and even of those who went out, many agreed with this view but had not the moral courage to act up to their opinions.

All the factories at which one made inquiries stated that there was no ill-feeling whatever between the management and the men, and that even the pickets whose job it was to persuade men not to go in to work were quite polite to the staff and to the men who remained at work. All of which goes to show that as soon as the crisis is over work will be resumed with good will all round.

One curious feature about the situation in the workshops is that in all factories the woodworkers seem to have gone out in a greater proportion than the other men. Fitters and machine hands, belonging to the Amalgamated Engineers' Union, have remained at work in fairly large numbers. In some shops all the sheet metal workers have gone out and in one shop they have all remained at work.

These facts are interesting. The woodworkers have always been inclined to strike in a quiet kind of way. Presumably there is something rather soothing about woodworking which allows men to think quietly, and apparently it breeds a mental attitude of philosophic Bolshevism. The woodworkers, commonly known as wood-butchers, are seldom inclined to actual violence. The sheet metal workers, generally known as tin-bashers, on the other hand, are more inclined to be violent anarchists. Any who have ever had anything to do with the tin-bashing shop, especially where sheet-metal-working machinery is used, must perforce understand, even if they do not sympathise with, the attitude of the sheet metal workers, for anything more nerve destroying than the rattle of the tin-bashing shop one cannot imagine.

With the engineers one has every possible sympathy. When a man has served years of apprenticeship in order to become a skilled workman it is ridiculous that his wage should be about £3 a week, when a brainless lump of a railway porter can get £4 a week, plus tips, as a trunk-smasher, or a road scavenger can get over £4 a week, even without tips, for mud-slinging.

Nevertheless whatever may be their personal grievances there is no doubt that the general feeling among the workers, outside the Aircraft Industry as well as in it, is that the Coal Trade might very well be left to settle its own affairs without interfering with other people who are managing to make a decent living.

There is one argument which might very well be used by readers of this paper who have to discuss the strike with Trade Unionists. Suppose, when motor cars and motor lorries began to supplant horse-drawn vehicles the carriage-builders and coach-builders and waggon-builders had called upon all the transport people to go out on strike and paralyse industry just because the Government of the period refused to keep the building of horse-drawn vehicles alive by means of heavy subsidies because the industry was incapable of supporting itself. Naturally everybody would have laughed at the horse vehicle people and would have told them that it was either time that they took to building motor bodies or went into some other business. Yet that is a precise analogy to what has happened in relation to the Coal Trade.

As a matter of fact, the Coal Trade is a thoroughly inefficient badly managed, badly engineered, badly organised, business which deserves to die a natural death if it cannot revive and reorganise itself. Everything to do with coal is inefficient. Every grate and every range in every house all over the World is designed to burn coal and not to use it. Practically every factory furnace in the World pushes about ninety per cent. of the potential heat of the coal up the chimney stack instead of using it for industrial purposes.

If our coal were used efficiently we could very well afford to pay £10 a ton for it and then get better value out of it than we do today. And at £10 a ton even the most inefficient coal-operating company could afford to pay the colliers three times their present wages and still allow their Directors to ride about in large motor-cars with fat cigars.

But of course the proper way to set about curing the trouble is first of all to make the mines themselves efficient. Naturally the mine operators, who must be carefully distinguished from the mine owners, who are owners by virtue of having bought or inherited the land under which the mines are situated and are nearly all gentlemen, will argue that the mines cannot be made efficient.

That is perfectly in accord with the general attitude of English manufacturers. The English motor manufacturer told us that it was impossible to fight american competition with cheap and good English cars, until Mr. Morris of Oxford came along and pushed the Ford off the road, with the result that today dozens of other English manufacturers are competing with Mr. Morris and one hardly ever sees a cheap or medium-priced american car.

Much in the same way some aircraft manufacturers argued that we could not produce high-speed fighting machines or high-speed machines of any kind, until Mr. Fairey came along with the Fox and showed us how it could be done.

And so, if only the Coal Trade could be left to itself, somebody, with the intellect of a Morris or a Fairey would arise and would discover some way of producing coal cheaply and paying the colliers properly, and some way of using all the waste stuff at the pithead to produce power or bye-products which would show a handsome profit, and he would probably flood the market with cheap grates and cheap ranges which would enable the householder to get perhaps fifty per cent. of the existent heat out of his coal instead of, as Mr. Pemberton Billing once put it, "presenting 95 per cent. of the heat to God, who does not want it."

The fact of the matter is that the present strike, besides causing us all a vast amount of inconvenience and causing the Nation a loss of millions of pounds through loss of trade—millions which would easily have paid for reorganising the whole Coal Industry and presenting everybody with a nice new efficient grate—is actually encouraging inefficiency in the getting and the use of coal.

We have been brought up to believe that coal is essential. We have not yet learnt that we can do perfectly well without coal so long as we can get oil. If coal is to continue to exist as a commercial proposition it has got to compete with oil on a commercial basis and no amount of bolstering with subsidies or boosting by strikes will ever make coal a commercial proposition. It has got to compete with itself.

Of course the truth is that the Bolsheviks among the Trades Union Councillors are simply using the Coal Trade in an attempt to promote revolution. The reason is that the colliers are supposed to be a particularly Bolshevistic crowd. As a matter of fact they are not. The average collier is a decent hard-working soul and an extraordinarily good sportsman. He is not given to using the knife like the cosmopolitan toughs in the seaport towns and he is not given to throwing bricks and generally behaving like a hooligan like the ordinary little cockney tough. And where the collier works in a mine which is owned and run by people with whom he is personally in touch he is one of the best fellows with whom anybody could wish to deal. It is only when he is up against the inefficient management of a soulless limited company that he is at all likely to become troublesome.

The loyalty of those who are remaining at work in the Industry deserves every commendation. And the loyalty of some of the workers is certainly being put to a very high test. One was told of an employee of the Hawker Company who cycles every day all the way from Deptford to Kingston to his work. And there is another, a man of over sixty years of age, who walks every day from Wimbledon and back. Those are examples of the British Working Man at his best and they are in fact typical of the vast majority of the workers of the Nation. The professional agitators who have caused all the trouble and the irresponsible young hooligans who are committing the acts of violence are in the main either not of English descent at all or they are merely Englishmen who have gone wrong.—*C.G.G.*

UNTRUTHS ABOUT THE R.A.F.

On Thursday, May 6, the continental "Daily Mail" published a paragraph the heading of which was singularly unfortunate. The wording was simply "R.A.F. Factory Strike". The paragraph itself made quite clear the fact that the strikers were engineers and electricians at the Royal Aircraft Establishment at Farnborough, but the heading caused several people within one's own knowledge to imagine that there was a strike in the R.A.F. itself.

This impression was confirmed, whether deliberately or not one does not pretend to say, by "The British Worker", the organ of the strikers, which on May 7 said "Five hundred aircraftsmen who are Trade Unionists have ceased work at Farnborough". As the word "aircraftsman" has precisely the same meaning in the R.A.F. that the word "private" has in the Army and the word "rating" in the Navy the natural inference was that five hundred "Other Ranks" of the R.A.F., who happened to be Trade Unionists before enlisting in the R.A.F., had ceased work.

Nothing could be further from the truth than the idea that there has been trouble in the R.A.F. The aircraftsmen of our First Line of Defence are as solidly loyal as are the men of the Navy and Army.

The truth was made known in "The Daily Mail" of May 7 when it said "A large number of civilian employees at the Royal Aircraft Factory, South Farnborough, Hampshire, came out on strike on Wednesday night but resumed work yesterday. (Volunteers were ready to fill their places.)" Evidently volunteers were ready to run the electrical supply of the Establishment so that the nine hundred men who did not agree to go on strike might go on with their work.

One is not at all surprised to hear of these people going on strike. During the War 1914-18 there was quite a lot of what was generally called Bolshevism at the Royal Aircraft Factory, even before it became the Royal Aircraft Establishment. Which was quite natural considering that the people there have never been of the same class as the ordinary employee in a commercial factory. They have never had to work hard enough to acquire the tone of first-class engineers, and they always have far too much time in which to run about and talk.

Even if the men went back to work after being out for a day their action is a warning of the evil of employing civilians in Government factories. More especially when so directly concerned with a fighting Service. It so happens that the R.A.E. is only concerned with experimental work for the R.A.F. and is not directly concerned with the supply of war material. But quick production of experimental work may affect vitally mass production of essential war equipment.

One believes that the employment of civilian employees, not in uniform, was, or is, part of the scheme for the manning of our Home Defence Squadrons. There seems no particular reason why in a time of emergency the civilian personnel of such squadrons should not go on strike just as readily as the employees at the R.A.E. Not being in uniform their loyalty would depend entirely on the individual personality of the Officer Commanding the station at which they were employed and not on any direct oath to the Crown or loyalty to their Service. So one hopes that the disloyalty of the employees of the R.A.E., in this time of emergency, will be taken to heart by those who are responsible for the manning of the Home Defence Squadrons.—*C.G.G.*

SURREY TRANSPORT.

The Surrey Flying Services have at Croydon at the moment a D.H.9. to carry two passengers and pilot, and they also have a five-seater Avro which besides the pilot will carry either four passengers or a couple of passengers and a considerable amount of luggage. And they have one of the standard joy-ride Avros which carries two passengers and pilot. The Surrey company also have a five-seater and a three-seater Avro joy-riding at Bournemouth, so that these will be available for people in that area.

The Southern Counties Aviation Company of Brooklands have several machines which can be hired if wanted.

OVER THE POLE ?

The Paris correspondent of the TIMES in a message dated May 10. states:- "The Oslo Correspondent of the CHICAGO TRIBUNE telegraphs that Lieut.Cmdr. Richard Byrd of the U.S.Navy reached the North Pole yesterday by aeroplane from Spitzbergen. Cmdr. Byrd left Spitzbergen at 1.50 a.m. yesterday and landed back there on his return from the Pole after a flight of 15½ hours."

A Reuter message from New York dated May 10 states that President Coolidge has expressed his heartiest congratulations to Cmdr. Byrd.

An Exchange message from Copenhagen dated May 10. states:- "The general impression among arctic explorers here seems to be that Cmdr. Byrd may have reached the North Pole but that his claim requires verification. M. Lauge Koch says that the explorer must have a six hours interval between two sets of observation before he knows his precise location and thinks that the utmost that Cmdr. Byrd will be able to prove will be that the distance he has flown agrees with the distance between King's Bay and the Pole and back."

Anyhow, what has he accomplished if he really did fly over the Pole? No scientific observations have been made and no fresh knowledge has been gained.

MORE AIR TRANSPORT NOTES.

What the little de Havilland Moths can do in the way of transport work was shown early in the strike when,on Friday, May 7, Major Packman, the chief pilot of the Newcastle-upon-Tyne Aero Club,brought a load of Newcastle papers to London. He left Newcastle at 07.20 hours and landed on York racecourse for petrol 55 minutes later. After a stop of only 10 minutes he left at 08.25 hours and arrived at Stag Lane at 10.35. He flew through rain all the way from Newcastle except for the last fifty miles and had to keep low owing to clouds. After a short stop at Stag Lane he returned to Newcastle the same day. London to Newcastle is pretty well a day's drive by car, so here is a very good demonstration of what even a low-powered aeroplane can do.

One of the hardest workers during the past week has been Lieut-Colonel G.L.P. Henderson. Col. Henderson has been running newspapers printed on the Continent from Lympne to Birmingham, the papers having been brought to Lympne by the Air Union from Paris. Leaving Croydon every morning at dawn on the Surrey Flying Services D.H.9. he has flown to Lympne, filled up there with petrol and papers,and thence has flown straight back to the Castle Bromwich Aerodrome at Birmingham. Thence he has come back to Croydon for a meal and to fill up with oil and has gone on to Lympne where he has picked up a second load of papers, taken them to Birmingham, and then come back to Croydon for the night. His day's work covered about 750 miles and on Saturday last he spent nine hours in the air.

On Sunday morning Mr. Youell had rather an unpleasant experience at Newcastle. He had gone up to Cranwell the previous night on a D.H.50. so as to get to Newcastle early on the Sunday morning. When he landed on the town moor at Newcastle shortly after daylight, he found that a mob of strikers had looted the lorry containing 3,000 copies of the "Newcastle Chronicle" which were waiting for him. Most of the mob had gone when he arrived but some strike pickets went out to him on the aerodrome and warned him to clear out as quickly as he could if he did not want to have his machine damaged. So he had to come back with an empty machine after re-fueling at the Newcastle Aero Club Aerodrome at Cramlington. One imagines that if the papers had been sent to Cramlington in the first place, some ten or twelve miles out of Newcastle, the mob would not have got there and nobody would have interfered with him.

Junkers ran a three-engined monoplane from Berlin to Croydon last week. It was due to return on Tuesday of this week.

A.D.C. Aircraft Ltd. have been testing a Martinsyde F.4. with a Nimbus engine. The cowling and rudder have been considerably altered. The machine, which is called the Boreas, is showing very great promise indeed though no performance figures are yet available.

Apparently even the chiefs of the Trades Unions are glad to use what they would call "black-leg transport" when it serves their own ends. The important international Socialist conference which came to an end at Ostend on May 9 was attended by Mr. Frank Hodges and Mr. Richardson, who flew over from London taking with them urgent requests to all the Transport and Miners' leaders of the Continent to support the general strike in England.

However these requests received little support from the Continental delegates. The German miners said that it was no good their striking in sympathy with the English. The economic conditions of Continental countries put a stopper on any idea of monetary aid. And the suggestion that Continental Trade Unionists should prevent coal from being exported to Britain was referred to a conference which is still to be held. All the conference did was to issue a communique congratulating the English miners on their firmness.

JOY-RIDING IN THE STRIKE AREA.

There was a rumour current in the Aero Club last week that the Berkshire Aviation Tour's machine which Mr. J.D. Parkinson had been flying at the colliery town Mexborough, near Leeds, had been prevented by the strikers from flying as they were under the impression that he was on some sort of Government aerial spy work. As a matter of fact, on the Sunday before the strike broke out, although all the colliers knew that the strike was coming off, Mr. Parkinson took up 320 passengers. He also took up over 100 on the following Monday and some 50 odd on Tuesday, the first actual day of the strike. Evidently the colliers, with their usual improvidence, were resolved on having a good time while the money lasted. One only hopes that the strike may be over before the colliers have spent all their money.

STRIKE NEWS FROM THE AIRCRAFT FACTORIES.

Such reports as are available from the aircraft factories show that except for the engine manufacturers the Aircraft Industry is able to carry on quite a considerable amount of useful work.

The aero-engine works all seem to have suffered very considerably and it is reported that the Rolls-Royce, Napier, Armstrong-Siddeley and Bristol works are practically at a standstill. The same remark applies to the Bristol aeroplane works and the Armstrong-Whitworth works.

Vickers Limited at Weybridge have only about seven per cent of their men out and work is proceeding satisfactorily subject to minor inconveniences caused by non-delivery of materials. The Hawker works at Kingston have well over half their men at work and the Fairey Aviation Company at Hayes have about the same percentage. In all these cases it is reported that some of the men who originally came out on strike are returning to work.

In the North of London De Havillands and Handley-Page report that a slightly worse state exists with something like sixty per cent of their men out.

In all cases except the Bristol and Armstrong-Whitworth works it is reported that the staff is adequate to meet the urgent needs of the Royal Air Force

It has not been possible to obtain any accurate information as to the state of affairs in most of the more remote aircraft works but in all probability the factories mentioned can be taken to represent the Industry as a whole.

THE CAPE TO MR. COBHAM.

According to "The Cape Times" of April 19 certain remarks of Mr. Cobham's in his speech at the lunch given to him by the Overseas Club in London "have caused a great deal of resentment and surprise".

Mr. Cobham said that the people in authority in South Africa did not understand flying, adding "They know nothing about it and do not seem to want to know anything about it" and that their mentality belonged to the past generation. "The Cape Times" asks "Who are the people in authority?", and points out that they are in fact the Civil Air Board because when the Government requires advice on aviation matters it goes to that body and it adds that on the Board are Sir Pierre Van Ryneveld and Major Miller, both well-known pilots, the former of whom blazed the way to the Cape for Mr. Cobham. And it also points out that Captain Lindup, a former flying officer, is the secretary of the Board.

Of course it is perfectly true that those three officers do know quite a lot about aviation, but what are they among so many? After all, they have to refer to the Treasury people and to the Cabinet of the Cape Parliament before they can get any money for aviation, and the way in which aviation has been handled in the Union of South Africa shows that the people who control the money certainly belong mentally to a past generation.

Mr. Cobham may have put his ideas with frank brutality, as one so often does one's own ideas in this paper, but in a general way he seems to have been about right. The mere fact that the South African Air Force is flying on obsolete war machines presented to the South African Government out of R.A.F. disposals stock immediately after the War, and the fact that not one single new machine has been bought for the South African Air Force in the seven years or so during which it has existed, is surely enough proof of the fundamental accuracy of Mr. Cobham's remark.

AIR LINES IN SOUTH AFRICA.

"The Cape Argus" on April 14 states that Mr. Peter Falk of the Junkers Company had then returned from Europe to submit alternative proposals from the Junkers firm to run the proposed South African air mail service. The previous afternoon Mr. W. Madeley, Minister of Posts and Telegraphs, had stated in the Cape Parliament that the Government was still prepared to devote a sum not exceeding £8,000 a year to assist in starting aviation in the Union of South Africa if fresh proposals were made and reasonable guarantees of an efficient service were given. Mr. Falk told a "Cape Argus" representative that the major portion of the share capital of the South African Company would be available for subscription by South African inventors.

Captain S.M. Wood of Johannesburg, one of the organisers of the proposed venture, said that he welcomed the postponement of the original proposition because it relieved the Government of the unjust accusation that it had unfairly given preference to German interests. The original scheme having fallen through the Government were open to consider fresh offers if they came along.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

Analysis of Figures for the Week Ending May 2.

Trips per Day.- Monday, 11; Tuesday, 10; Wednesday, 10; Thursday, 18; Friday, 18; Saturday, 14; Sunday, 8.

Imperial Airways Ltd.:
London-Paris-Zurich; London-Ostend-Brussels-Cologne; London-Rotterdam-Amsterdam-Berlin; Machines 37; passengers 243; freight 15 tons.

Air Union:
Paris-London: Machines 29; passengers 135; freight 10 tons.

K.L.M.:
Amsterdam-Rotterdam-London: Machines 10; passengers 11; freight 2 tons.

S.A.B.E.N.A.: Brussels-London: Machines 2; passengers 10.

Special: Mr. Travers, D.H.9., 1 passenger to Como.

Total number of trips by British Machines, 48, carrying 244 passengers. Foreign Machines, 41, carrying 156 passengers.

Comparative Figures:

Week ending May 2:
Machines, 89; Passengers, 400; Crews, 112; Total personnel, 512.

Corresponding week, 1925:
Machines, 82; Passengers, 441; Crews, 120; Total personnel 561.

Analysis of Figures for the Week Ending May 9.

Trips per Day.- Monday, 16; Tuesday, 25; Wednesday, 32; Thursday, 29; Friday, 35, Saturday 25; Sunday, 14.

Imperial Airways Ltd.:
London-Paris-Zurich; London-Ostend-Brussels-Cologne; London-Rotterdam-Amsterdam-Berlin; Machines, 82; Passengers, 579; Freight, 24 tons.

Air Union:
Paris-London: Machines, 69; Passengers, 316; Freight, 20 tons.

K.L.M.:
Amsterdam-Rotterdam-London: Machines 20; Passengers 110; Freight 3 tons.

S.A.B.E.N.A.:
Brussels-London: 14 machines, 75 passengers.

Special: Junkers, Berlin-London: Machine 1, Passengers 5.

Total number of trips by British Machines, 82, carrying 579 passengers. Foreign Machines, 104, carrying 506 passengers.

Comparative Figures:

Week Ending May 9:
Machines 186; Passengers 1085; Crews 232; Total Personnel 1317.

Corresponding week, 1925:
Machines 125; Passengers 386; Crews 158; Total Personnel 544.

THE ROYAL AIR FORCE.

THE BRITISH GAZETTE of May 7. states that there is objection to officers of the Reserve of Air Force Officers d airmen of the R.A.F. Reserve joining the Special Constabu- ry or otherwise offering their assistance in connection with e maintenance of vital services. If accepted for civil ployment officers should inform the Secretary, Air Ministry d other ranks the Officer i/c Records, Ruislip, stating their dress.

Communication Work.

THE TIMES of May. 7 states that Squadrons of the .A.F. have been stationed at various aerodromes and are standing by for use in carrying urgent communications.

Copies of THE BRITISH GAZETTE published by H.M. tationery Office are being distributed in outlying parts the country by the R.A.F.

The Cairo-Cape-Town Flight.

The Cape flight, R.A.F. left Pretoria on May 3 and arrived at Bulawayo on the same afternoon. The flight arrived at Livingstone at 10.32 on May 5.

The Royal Tournament.

The Royal Tournament at Olympia has been postponed from May 16. to July 8.

Canteen Supplies.

The Navy, Army and Air Force Institutes bought six weeks' supplies before the strike began.

R.A.F. SPORTS AND PASTIMES.

ORTHOLT: The teams representing Northolt have had a very uccessful winter season. The Association football team as won four competitions, the Harrow Wednesday League, the arrow and District League, the Harrow Wednesday Shield and he Harrow Charity Cup. The Boxing teams won the No. 6 roup Boxing League both for Officers and Airmen. Northolt lso won two weights in the inter-Group Wakefield Boxing ompetition.

OLWICH, SANDHURST and CRANWELL:- The team representing the .A.F. Cadet College, Cranwell was unable to compete in the riangular contest at Queen's Club on May 8. Sandhurst beat olwich by 8 of the 9 events. The 10th event, the hurdles as a dead-heat.

Air Affairs in Parliament.

Airships.

In the House of Commons on May 3 in reply to a estion by Sir F. Sykes, the Secretary of State for Air aid that all scientific data of general interest acquired the result of the airship flights carried out since 24 would be published but at present the data produced by e later experiments of 1925 had not been completely alysed. The fullest possible information in this spect would be supplied to the constructors of R.100. rther experimental flights for the production of construc- onal data before R.101 was laid down were not considered cessary. The contract for the construction of R.100 ovided that this airship was to be capable of being ored to the Air Ministry type of mast.

PERSONAL NOTICES.

RTH:- Haskins: On May 2. at Idaho, Ruislip, to Marie, wife Wing.Cdr. F.K.Haskins, D.S.O., R.A.F., - a son.

Pope: On April 30. to Nira wife of Capt.Pope, J.P., e K.S.L.I. and R.A.F., of Partyseal. Monmouthshire - a son.

TH:- Waller: On May 6. at Ashcroft, Prestwood, Bucks. or James P.A.Waller, late R.A.F., son of Mr. and Mrs. J.A. ller of west Stratton House, Micheldever, in his 36th year.

AIR TRANSPORT.

During the past week Imperial Airways have been running llocated services to and from Paris at midday and a single rvice to and from Paris at 5 p.m.

The D.H.54. has been pressed into the service but unfor- tately it forced landed at Le Touquet on its way back from s on May 6.

Passengers at Le Bourget have been trying to force their without tickets into machines already booked.

It had been proposed to import the "Continental Daily Mail" air from Paris but companies were warned that this might d to trouble and were requested by the police not to do so. Air Union, however, took the job on and dropped their ers at Lympne. There was also talk of printing "The Daily l" in Holland and importing it by air,

S.A.B.E.N.A., the Belgian Air Transport firm, is now rating a daily service between Brussels and Croydon using dley Page Hamiltons (Rolls-Royce and two Pumas). These e all been running with a full load of passengers.

The Royal Aero Club announces that it has three .Moth training machines which it is prepared to use for nt inland transport. Each machine carries one passen- or a total useful load of 220 lbs. Five other machines also available all at a charge of 2/- a mile.

Mr. Harold Perrin is doing some good work in the dis- ribution of the continental "Daily Mail". He has ob- ned a number of Club and private Moths, Avros, D.H.9s., c. and with these "The Daily Mails" are collected from mpne, whither they are brought from Paris by the Air ion, and distributed all over the country. Mr. R.A. der of the de Havilland Aircraft Co. Ltd. is in charge arrangements at Lympne.

It is an ill wind that blows nobody any good and the ying clubs are likely to profit by this arrangement.

The de Havilland Airoraft Company have been very busy uring the whole of the week. They have acquired two xtra D.H.9s. from the A.D.C. Aircraft Company and have mporarily engaged Mr. Frank Courtney and Mr. Leslie amilton as extra pilots. Their headquarters have been mporarily established at Lympne and at the moment of ing to Press it has not been possible to obtain details their work but on Sunday, May 9, they covered over 500 miles and there is every reason to suppose that the record will be beaten very shortly

AVIATION INSURANCE.

The British Aviation Insurance Group, which consists of the te Cross Aviation Insurance Association, of Underwriting bers of Lloyds, and the Union Insurance Society of Canton ., of 78-80 Cornhill, E.C.3., notify that Lieut-Colonel C.E.C. agliati and Captain A.G. Lamplugh have been appointed Joint

FOREIGN NEWS.

Madrid-Manila.

The Sheffield Daily Telegraph of May 6. states that the Portuguese gunboat Macao picked up Captain Loriga on May 5 after he had been missing for four days.

Fokkers for Switzerland.

In April the K.L.M. sold five of the Fokker F.IIIs., previously used on the Amsterdam-Rotterdam-London service, to the Basler Luftverkehr A.G. (Balair), and on April 10 these five machines, H-NABG, H-NABJ, H-NABK, H-NABN and H-NABQ, piloted by Messrs. Geysendorffer, Scholte, Sillevis, Duimelaar and Smirnoff flew from Waalhaven to Basel in close formation, the flight leader being Mr. Geysendorffer. This must be the first occasion on which five commercial aeroplanes have flown in formation for such a long distance. The Basler Luftverkehr A.G. will operate a service between Basel and Mannheim with these machines.

Whence the Auto-Giro?

As the result of the success of the Cierva Auto-Giro it was only to be expected that various claims would be made by "inventors" who had forestalled the patents or, at any rate, the practical demonstrations of the successful Auto-Giro.

One such claim is made by M. Lucien Chauviere, the well-known French airscrew designer, who declares that he filed a patent for a method of support by turning surfaces, which were not airscrews, in 1917. The investigation of this claim should prove interesting.

Another Pinedo Flight.

Colonel the Marchese di Pinedo is preparing for a new long distance flight, from Rome to Tokyo and return, and although the type of machine he is to use has not been definitely stated, the fact that he has proceeded to Marina di Pisa to test the machine on which he is to fly indicates that he will be using a Dornier Wal. It is known that the engines will be two Isotta-Fraschini Asso twelve-cylinder water-cooled type and two Fairey-Reed airscrews will be used.

German Aircraft.

A Diplomatic Correspondent of THE BRITISH GAZETTE of May 10. states:- "The negociations which have been taking place for several months between representatives of the Conference of Ambassadors and of the German Government regarding German aircraft have resulted in an agreement. The agreement is in the form of an exchange of Notes, with annexes between the Ambassadors' Conference and the German Ambassador in Paris. The representatives have initialled the text of the various documents, which will be signed as soon as they have been approved by the Governments concerned. This brings to an end the operation of the so-called Nine Rules drawn up by the Ambassadors' Conference, together with the presence in Germany of an Allied Air Committee of Guarantee. After Locarno the German Government suggested that German legislation should take the place of the Nine Rules and that the Committee of Guarantee might then disappear. The negociations which have now been successfully concluded were for the purpose of seeing that the legislation proposed by Germany covered the same ground as the Nine Rules."

Seal-Spotting from the Air.

The Sowtorgflot (the Soviet Merchant Fleet) has come to an agreement with the Russian Air Transport Co. with a view to employing Russian built Junkers aeroplanes for tracking seals along the coast of the White Sea and pointing out sealing grounds to the ships. Hunting has already begun and 50,000 skins have been captured in two weeks. More machines of the same type will be put into service for the same purpose.

A Seville-Lisbon Air Route.

A new experimental air line has recently been inaugurated between Seville and Lisbon. It is being operated by a triple-screw Junkers aeroplane of Swedish construction.

A Flight from Teheran to Angora.

A triple-screw Junkers aeroplane has recently carried out a successful flight from Teheran to Angora, a distance of 1215 miles in 13 hours. The section between Tabriz and Angora leads over the high mountain chain of the Anti-Taurus. The pilot was Herr Schabele

German Air Traffic.

A message from Berlin in THE BRITISH GAZETTE of May 7. states that the air traffic from Frankfort which was resumed on April 19 is developing satisfactorily. Forty-three towns in Germany and abroad are now served regularly including Marseilles, 525 miles away, Budapest, 510 miles, Malmo, 470 miles, London, 455 miles and Copenhagen 435 miles.

The United States Air Mail Service.

The Post Office Department has entered into contract with ten contractors in the United States for the handling of mails by aircraft in various parts of the country.

The Polar Expedition.

Capt. Amundsen's polar airship, Norge left Trotsk for Spitzbergen at 9.30 a.m. on May 5. She passed over Kem on the coast of the White Sea at 10.10 on the same evening. At 1.15 on the morning of May 6 she was sighted over Kandalaksha. She arrived at Vadsoe at 4.30 on May 6. and at King's Bay, Spitzbergen on May 7.

Prospecting By Air.

A new company known as the Patricia Airways & Exploration Ltd. has been formed in Toronto with the object of running a communication service between Toronto and Red Lake, Ontario. The company has been formed by a group of prominent Canadians and is under the direction of Major G.A. Thompson, formerly an officer of the Ontario Provincial Air Service. Red Lake is claimed to be one of the biggest gold-bearing areas yet discovered. The company have acquired a Curtiss Lark biplane fitted with one 200 h.p. Wright Whirlwind engine. This machine is equipped with skiis and when the ice breaks up in the spring a central pontoon float will be fitted

The distance from the nearest railhead, Hudson, Ontario, to Red Lake, is 150 miles and charge for passenger carrying will be 200 dollars per passenger and one dollar per pound for freight and mail. For every passenger carried to Red Lake it will be necessary to carry an allowance of food and supplies as the country is entirely uninhabited. The trip from Hudson to Red Lake by dog sleigh takes six days whereas a Curtiss Lark

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Fokker Aircraft In Italy.

The first aeroplane produced by the manufacturers of the famous Alfa-Romeo automobiles has arrived at Montecelio for test by the Italian Regia Aeronautica. This machine, known as the RO.1. is a Fokker two-seater fighter biplane of the C.V. type and is fitted with a 400 h.p. Jupiter-Romeo engine. Under test the RO.1. has shown a climb to 1,000 metres in 2 mins. 19 secs., 3,000 metres in 10 mins. 22 secs., and 5,000 metres in 26 mins. 46 secs.

It will be remembered that the Alfa-Romeo Company acquired during 1925 the licence to construct both Fokker aeroplanes and Bristol Jupiter in Italy.

THE B.B.C.

The British Broadcasting Company does not improve even under control. The first day they gave us useful news. Nowadays if you want to hear any news you have to listen to an hour or so of train time first. This caused an airship officer of one's acquaintance to remark that the B.B.C. seemed to think that all people wanted to hear was "Uncle somebody or another giving an impassioned recital of the stirring works of the great British poet Bradshaw".

All the same, for the first time in its life the British Broadcasting Company is being genuinely useful. It is giving people all over the country a chance of getting at something like the truth as to what is happening. People of all political opinions listen-in so that they do not get prejudiced or garbled news as they may in newspapers.

AVROVER.

Mr. Bert Hinkler took Mr. A.V. Roe from Hamble to Martlesham on an Avro Lynx last Wednesday. After landing and having come to a standstill the machine suddenly met a strong gust of wind and slowly turned over onto its back. Neither Mr. Roe, Mr. Hinkler nor the machine were damaged. Mr. Roe said that the feeling reminded him of the old days.

HIDE NOT YOUR LIGHT.

It is understood that Mr. Alan J. Cobham will not start on his flight to Australia until the daily Press is in full and complete operation again.

It was rumoured that "The British Gazette" and "The British Worker" were in keen competition to secure the rights of the story but one gathers that these papers are ruled out altogether as they do not publish photographs.

However, realising the genuine value of Aviation Propaganda, one hopes that the Press will have resumed its normal sense and functions by the time Mr. Cobham is scheduled to start.

Mr. Cobham is in actual fact being delayed by the strike in other ways. Work has ceased on his engine at Coventry. He was due to start on May 3 but a considerable alteration in plans may be necessary as this delay will cause a collision with the monsoon and there is no room for Mr. Cobham and the monsoon at the same time in India.

THE "Bristol" AEROPLANE Co. LTD.
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DESIGNERS AND CONSTRUCTORS OF NAVAL FLYING BOATS AND NAVAL AMPHIBIAN FLYING BOATS.
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Printed for AERONAUTICS LTD. by BONNER & Co. LTD., The Chancery Lane Press, Rolls Passage, London, E.C.4; and Published by AERONAUTICS LTD. at 14, Bream's Buildings, E.C.4.

THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXX. No. 20 SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

"BUT EACH MAN BORN IN THE ISLAND BROKE TO THE MATTER OF WAR,
"SOBERLY AND BY CUSTOM TAKEN AND TRAINED FOR THE SAME."

(Kipling.—THE ISLANDERS.)



THE R.A.F. RESERVE IN TRAINING: Instructors and Pupils of the De Havilland School at Stag Lane with their D.H.9s and Moths, Puma and Cirrus Engines, and a radial-engined D.H.9 on the left.

Fit PALMER for Peace of Mind

THE PIONEERS OF THE CORD TYRE INDUSTRY.

SEE PAGE 485 FOR PALMER LANDING WHEELS AND TYRES. (223)

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An Important Feature

THERE are many special features incorporated in the new Avro "GOSPORT" which make it the finest training machine extant.

This announcement is to direct attention to the LONG MAIN SKID. This not only protects the tip of the propeller, but, in the case of a faulty landing by a pupil often prevents serious damage.

This special feature is just one of many. It illustrates the extraordinary care which has been taken in the machine's design and construction.

The performance of the "GOSPORT" as a training machine is beyond comparison, but its designers were not satisfied with performance only. Robustness of construction (of which the long main skid is a typical example) has not been sacrificed to lightness. The "GOSPORT" is thoroughly capable of withstanding the rough handling inseparable from training use.

NOTE.—From their long experience of training requirements, combined with continuous research and experiment A. V. Roe and Co., Ltd., have produced the "GOSPORT" as the last word in training machines. It embodies in the most modern form of construction every desirable feature of an instructional aeroplane and has exceptional facilities for overhaul and repair.

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MAY 19, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX.

No. 20.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months, 32s. Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8s. U.S.A., 1 Year, $8 50c.

[This issue of THE AEROPLANE went to press on the usual date, Tuesday, May 4. But, ving to the State of Emergency, it could not be printed. It is now issued dated May 19. ie Emergency Issue which had been prepared when the Strike was called-off is inserted as supplement in all copies except those sent to subscribers, who have already received the pplement by post. It is offered as a sample of the British Nation's effort to carry on under fficulties.—C. G. G.]

ON INTERNATIONAL AIR RECORDS.

Hereafter there follows a list, issued by the Royal Aero ıb, of air records recognised by the Fédération Aéro- ıtique Internationale as from July 1, 1926. The list occu- s a vast amount of space but it is worth publishing if y for the sake of demonstrating the futile attitude of mind those who are concerned with mis-governing the whole ort of Flying, not only in this country but in others.

The only records which really matter to anybody are those the greatest speed attained, the greatest height reached, greatest time spent in the air and the greatest distance ered in a straight line across country. And to a minor ex- t there is interest in the greatest distance covered with- alighting over a marked course covered a number of ies.

There is also a considerable amount of interest in similar ords for seaplanes, though naturally that interest is not great as is the interest in the records for ordinary aero- nes, which must necessarily attain to higher figures than ose for seaplanes.

Presumably aeroplanes are relegated to Class C because loons and airships existed before aeroplanes. But obvi- ly aeroplane records are those which have the most in- est for everybody, and so should certainly be in Class A. Very few people in these days care anything about the ght, duration and distance records of free balloons, but as matter of antiquarian interest it is worth while keeping se records on the list. They might very well be Class C. o far there is very little interest in airship records. But speed, height and distance records of airships are worth ulating, because airships will be of very great interest in future. Therefore they might remain as Class B.

Working out the total number of records recognised under this schedule is far too much of a mathematical problem to be worth while. But the futility of the whole thing may be seen by looking at the records under Class C, No. 7, which is called "Useful Load." There you have four categories of useful load and five distances over which the speed with that useful load is to be measured, so that you have twenty speed records for different loads over different distances. Likewise you have twenty records each for Height, Distance and Duration respectively. And on top of that you have a special height record for the greatest dead weight carried to a height of 2,000 metres.

Perhaps the silliest records of the lot are those under Class C and Class Ca, No. 8, for the greatest duration and the greatest distance in a closed circuit covered by refuelling during flight. The test in that case is simply how long the crew can hang out without fainting from fatigue so long as the engine does not break down.

In the recent test of the Bristol Jupiter engine it was shown that the engine could go on running for 225 hours without having to stop. So, provided that anybody can produce sparking plugs which will stand up for that period, or providing that somebody will go for the record with a multiple-engined machine in which the plugs of one engine can be changed while the others keep the machine in the air, there is no particular reason why a crew of infatuated idiots should not remain in the air for nine days without alighting, always providing that other equally infatuated persons are prepared to buy petrol for them.

The obviously sensible thing for the Fédération Aéronautique Internationale to do would be to cut down all the



A WEIGHT-CARRIER.—The Avro Aldershot (Rolls-Royce Condor) long-distance bomber flying at Hamble.

records for each class of aircraft simply to absolute speed, absolute height, absolute distance, and absolute duration.

If they particularly wanted to give big machines a chance they might institute, perhaps, three or even four classes of machines, one the pure speed and climbing machine of unlimited lightness, one for a medium class such as we now call the light aeroplane, another for the big class such as our high-performance bombers, and one for giant aeroplanes of unlimited size.

But, at the finish, what really interests people is the fastest speed at which any aeroplane can travel, the greatest height which it can possibly reach and the greatest distance which it can cover from one point to another without stopping.

At the end of this futile list will be found the conditions under which speed records and height records have to be made. These deserve study because there are so many ways by which records can be faked or misrepresented. For example, by fulfilling all the other conditions, a speed record can be made by breaking that one condition about diving at the starting line. And all sorts of speed records are constantly being claimed for various machines by newspapers because machines can travel at enormous speeds with the wind behind. Also many bogus height records have been claimed simply by reading the barographs without making corrections for atmospheric conditions. These regulations stop such tricks.

However, here the readers of this paper have a complete list of the World's records, and by referring back to it they can at any rate argue with others as to whether so-called records which are bruited abroad in the Press are really records or not.—C. G. G.

RECORDS RECOGNISED BY THE FEDERATION AERONAUTIQUE INTERNATIONALE.

CLASS A. FREE BALLOONS.

(For each of the categories of recognised cubic capicity):—1, DURATION (without landing); 2, DISTANCE (without landing); 3, HEIGHT.

(Irrespective of Categories):—1, GREATEST DURATION (without landing); 2, GREATEST DISTANCE (without landing); 3, HEIGHT.

CLASS B. AIRSHIPS.

1, DURATION (returning to the point of departure without landing); 2, DISTANCE (returning to the point of departure without landing); 3, HEIGHT (returning to the point of departure is optional); 4, SPEED (over a given distance in a closed circuit, without landing) for 100, 500, 1,000, 2,000, and 3,000 kilometres.

CLASS C. AEROPLANES.

1, GREATEST DURATION (in a closed circuit without landi
2, GREATEST DISTANCE (in a closed circuit without landi
3, GREATEST DISTANCE IN A STRAIGHT LINE (without la
ing) (this Record must be beaten by at least 100 Kilometres);
HEIGHT (returning to the point of departure is optional);
GREATEST SPEED OVER A STRAIGHT LINE COURSE; 6, SPE
(over a given distance) for 100, 500, 1,000, 2,000 and 5,000 Kilomet
7, USEFUL LOAD of 500, 1,000, 2,000, and 4,000 Kilos. for Durat
Distance, Height, and Speed (over 100, 500, 1,000, 2,000, 5,000 K
metres). Also Greatest Useful Load transported to a height of
metres. (N.B.—Useful load must be dead weight. The wei
of oxygen cylinders and all accessories which can be used by
crew does not count in the useful load.) 8, REFUELLING DURI
FLIGHT. Greatest Duration (in a closed circuit without landi
Greatest Distance (in a closed circuit without landing).

CLASS CA. SEAPLANES.

1, GREATEST DURATION (in a closed circuit without alightin
2, GREATEST DISTANCE (in a closed circuit without alightin
3, GREATEST DISTANCE IN A STRAIGHT LINE (without ali
in) (this Record must be beaten by at least 100 Kilometres);
HEIGHT (returning to the point of departure is optional);
GREATEST SPEED OVER A STRAIGHT LINE COURSE; 6, SPE
(over a given distance) for 100, 500, 1,000, 2,000, and 5,000 Kilomet
7, USEFUL LOAD of 500, 1,000, 2,000, and 4,000 Kilos. for Durat
Distance, Height, and Speed (over 100, 500, 1,000, 2,000, and 5,
Kilometres). Also greatest Useful Load transported to a height
2,000 metres. (N.B.—Useful load must be dead weight. The weigh
oxygen cylinders and all accessories which can be used by the c
does not count in the useful load.) 8, REFUELLING DURI
FLIGHT. Greatest Duration (in a closed circuit without alightin
Greatest Distance (in a closed circuit without alighting).

CLASS D. GLIDERS.

1, DURATION (returning to the point of departure without la
ing); 2, DISTANCE (returning to the point of departure without la
landing); 3, DISTANCE IN A STRAIGHT LINE (without landi
4, HEIGHT (above point of departure); 5, SPEED (in a closed cir
of not less than 1 Kilometre without landing).

CLASS G. HELICOPTERS.

1, DURATION (returning to the point of departure without la
ing); 2, DISTANCE (returning to the point of departure without la
ing); 3, DISTANCE IN A STRAIGHT LINE (without landing)
HEIGHT (above point of departure)—minimum 10 metres; 5, SPE
(over a given distance without landing) for 1, 10, 100, and 500 K
metres; 6, USEFUL LOAD of 200, 500, and 1,000 Kilos. Duration
a closed circuit without landing), Distance (in a closed circuit w
out landing), Height (above point of departure), Speed (in a cl
circuit without landing) for 1, 10, 100, 500 Kilometres. (N.B.—Us
load must be dead weight. The weight of oxygen cylinders and
accessories which can be used by the crew does not count in
useful load.)



NOT YET BROKEN DOWN.—A photograph by the Surrey Flying Services of London Bridge, which seems chiefly famous in song for having been broken down. In the foreground is Southwark Cathedral, and on the left of the far end of the bridge is the famous Fishmonger's Hall.

Napier's part in Civil Aviation!

"IT is a great tribute to the reliability of the Napier engine that no British machine has been forced down in the Channel.

The de Havilland 34 and the Napier Lion engine deserve every praise for the part they have played in making Civil Aviation."

Aeroplane—31st March, 1926

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Cairo to Cape Town by 4 R.A.F. machines.

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CONDITIONS OF RECORD-MAKING.

Speed Records.

In all Speed Records aircraft must pass the starting line in horizontal flight and not enter the course by diving.

Greatest Speed over a Straight Line Course.—CLASS C. AEROPLANES:—These Records must be made over a straight line course of 3 Kilometres, particulars of which must be deposited with the F.A.I. for approval.

Two posts fixed in concrete shall indicate the two extremities of the course of 3 Kilometres; two other posts shall indicate a distance of 500 metres at each end of the course. The course must be covered twice in each direction in one flight and at a constant height of not more than 50 metres, which must also be the height of the machine for 500 metres before entering the course.

The height attained during the flight, from start to finish, must not exceed 400 metres. This must be verified by the Officials and a barograph.

The speed of each of the four flights over the course must be calcuated.

The average of these four speeds shall be the speed for the record.

The record must be beaten by at least 8 Kilometres an hour.

CLASS Ca. SEAPLANES.—Records for greatest Speed over a straight line course for Seaplanes (Class Ca) come under the same regulations as for Aeroplanes (Class C), except as regards the marking of the course of 3 Kilometres and the height at which the seaplane must fly over the course

The course must be marked out by two parallel upright posts 3 Kilometres apart, and these must be clearly distinguished by two parallel lines in such a way that it is possible for the pilot to cover the course of 3 Kilometres over the water.

The stipulation regarding the 500 metres before entering the course stands.

The maximum height allowed when flying over the course is 150 metres.

For the purpose of indicating the course Buoys may be placed on each of the lines, but the times taken between the two posts shall be the only times taken for calculating the speed. The Buoys shou mark the maximum distance from the land at which the seapla may fly.

The posts used for observation and marking the course must placed in concrete foundations.

Seaplanes shall only establish records for greatest speed over sea course, and not on any course over land. Particulars of t course must be deposited with the F.A.I.

It must be stated by the officials that the seaplane started a finished on the water.

CONTROL OF HEIGHT RECORDS.

The aircraft shall be provided with one or two sealed barograp which must be attached and sealed to the aircraft. Suspension elastic is allowed. The barograph may only be detached from t machine by the official observing the test, except in Class A, when may be done by the pilot.

In the case of aircraft carrying two barographs, one of these sh be regarded as the official barograph and must be designated as su before the test. The second barograph shall only be examined if t official barograph has failed to record the flight.

The examination of the barograph shall not be undertaken un 24 hours after the test.

The pressure reading shall be interpreted by calibration of the strument under an air pump in the course of which a diagr must be produced similar to the one to be verified. This calibrati must be carried out at an official laboratory under the responsibili of the National Federation. A certificate of such calibration shall attached to the documents. The pressure at the point of depart of the flight shall be taken as 760 m/m.

The height attained shall be determined by barometric press converted into metres by means of a standard table irrespective of t height of the point of departure and the pressure at this point the time of the test. This table is published by the F.A.I. a must be used by all countries of the F.A.I.

The barograph must not be used for at least 24 hours either af a flight or after being under an air pump.

Height records must be beaten by at least 100 metres.

EYEABILITY.

That article "On Some New Things" has produced the following letter from one who has long been concerned with Aviation. It deserves to get (later) some explanation:—

Sir,—May I be permitted to make a slight comment on certain statements which you have made in your editorial article of the current issue of THE AEROPLANE? In the first place you remark that perhaps "one is becoming an old fogey and ultra-Conservative," and in apparent proof of this sad statement you remark on the following page that "it should be possible to make an aeroplane which looks like an aeroplane and will still get off the ground in just as short a run as the Auto-Giro."

Now, Sir, perhaps you can tell me what an aeroplane should look like. This may, on the face of it, seem a foolish question, but I think a little consideration will show that it is not.

We all know what an aeroplane *does* look like. But must it follow that this is what it *should* look like?

The people who built the first railway carriages thought that a railway carriage should resemble as closely as possible a stage coach. And the people who built the first steam ships were obsessed by the general lay-out of a sailing vessel. May it not be that, as the science of aviation progresses, we shall see variations from the first types as great as, or probably greater than, those that are now obvious in the two examples which I have given?

In building aircraft we are dealing with something which is so new to our experience that it would seem that any attempt to decide, at this early period of the history of aerial transport, what an aeroplane should look like is likely to react adversely on our rate of progress.

I believe that it is a pretty sound rule that any piece of mechanism which *looks* right *is* right. But when we are dealing with a question such as this, where the possibilities are to so large an extent unknown, we should be wise to retain an open mind, not welcoming a thing just because it is odd in appearance, but at the same time not mistrusting it because it does not resemble what has gone before.

(Signed) C. NEVILLE BRAND.

[One thanks Mr. Brand for what amounts to an excellent little dissertation on "eyeability." It may be taken as an axiom that what *is* right *looks* right. But unfortunately many a machine (aircraft and other) which *looks* right *is* all wrong. The real question, as Mr. Brand suggests, is wh is the particular quality which constitutes *looking right?*

Now the point is this.—One can imagine half-a-dozen aer planes in line on an aerodrome, and a bunch of critics wal ing along and agreeing that one is a pretty machine, one an impressive machine, one is an ugly beast, another loo workmanlike, yet another is a freak, and the other mere futile. But can one imagine the critics discussing half dozen Auto-Giros in the same way?

Let us see. One can imagine half-a-dozen exactly simil machines each with a different airscrew, and the critics agr ing that the Reed looks efficient, and the Leitner-Watts bu nesslike, and one wooden screw a beautiful piece of work, a another a bit flimsy, and another an ugly club, and anoth the wrong shape. And in a similar way one can imagine t critics giving their opinions on a row of Auto-Giros.

So possibly our eyes may come in time to believe that Auto-Giro is beautiful and that, say, the Fairey Fox is comic a sight as the early R.E.8s—known during the W 1914-18 as "Harry Tates"—would seem to-day. But st one does not believe it.

The tail-less aeroplane is easier to reconcile with our prese ideas. One's eye can get as accustomed to aeroplanes wi out tails as it does at Monte Carlo to pigeons without tai And still, one does not believe it.

One's attitude, and probably the attitude of most aviati people, is rather that indicated by the American legend th when one tries to convince a New Englander he says, "Sh me," but when one tries to convince a Kentuckian he sa "Show me and put it in my hand.—C. G. G.]

THE R.Ae.S. PRESIDENT.

At a meeting of the Council of the Royal Aeronauti Society held on Tuesday, Apr. 13, Air Vice-Marshal Sir Seft Brancker, K.C.B., A.F.C., F.R.Ae.S., was elected President the Society.



"SHELL OIL ACQUAINTANCE BE FORGOT?"—The Breguêt XIX of Capt. Estevez at Tunis en route from Madrid to Manila. It may be noticed from a close inspection that Shell spirit and Shell oil have been used on the flight.


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CAPTAIN ALBERT WOMBWELL.

On Apr. 27 the retirement of Flt. Lt. Albert Wombwell, dated Apr. 25, was notified in the *London Gazette*.

He retires with, apparently, the rank of Captain in the Army, having served for nearly 20 years in the ranks, for five years as a warrant officer, and for six years as a commissioned officer in that Service.

There can be few whose personality has impressed itself on the officers and other ranks of the R.A.F. to a greater extent than that of Albert Wombwell, known to friends and enemies alike as "Pussy" Wombwell—for reasons of which the present writer is ignorant. To him more than any other one individual is due that smartness among the aircraftsmen of the Air Force which is so noticeable whether on or off duty and does so much towards impressing on the British Public that the R.A.F. is in truth our First Line of Defence.

His work in training the men who gave that striking display at Wembley last year is alone enough to entitle him to permanent fame, for nothing has done so much to enhance the regard in which the R.A.F. is held by the British Public as has that display. And there must be many among the thousands in the R.A.F. who have passed through his hands who will be glad to have a momento of him and his work.

Albert Wombwell was the son of a Quarter-Master Sergeant in the Grenadier Guards and was born in the married quarters at Kensington Palace, to which establishment his father was attached at the time. He enlisted in the 2nd Battalion the Grenadier Guards, in November, 1892, and transferred to the 2nd Battalion the Rifle Brigade in December, 1895.

With the Rifle Brigade he served in the Sudan and South Africa, qualifying for the English Sudan Medal, the Khedive's Medal with clasp for Khartoum, 1898, and the South African Medal with clasp for the defence of Ladysmith, 1898. He was also mentioned in Sir George White's Despatch for Services in Ladysmith published in *The London Gazette* of Feb. 8, 1901. In addition he wears the Army's Long Service Medal and Good Conduct Medal.

In April, 1901, he was transferred to the Royal Military College at Sandhurst as Staff Sergeant, and there acted as an Instructor of Gentlemen Cadets for 11½ years. In September, 1912, he was promoted Sergeant-Major (Warrant Officer Class 1) at the Royal Military College and served in that capacity for about 4½ years. Naturally during that period of nearly 16 years the majority of those who are now officers of the British Regular Army with anything between ten and twenty-five years' service to their credit passed through his hands.

On Mar. 16, 1917, he was commissioned in the Lincolnshire Regiment and seconded at once for service in the Royal Flying Corps. For a month he was drill Adjutant at the R.F.C. Depôt at Farnborough and thereafter was Officer in Charge of Headquarters, Drill and Discipline of Cadets, at No. 2 School of Aeronautics, Oxford, where he remained till January, 1919.

For a short period he commanded the Port Meadow Station at Oxford. He was then ordered to France as Camp Commandant, H.Q., R.A.F., in the Field at St. André. In April, 1919, he was invalided home for an operation on an old wound which he had received in the South African campaign, and on his recovery some three weeks later he was appointed Officer Commanding "M" Section, R.A.F. Depôt at Halton Camp. There he remained for about a year till the Depôt was moved to Uxbridge.

He went to Uxbridge as Drill Adjutant of "T" Squadron (Training Recruits) in April, 1920, and remained there in that capacity until his retirement.

He was retired from the Army under the age limit on Apr. 25, 1923, having then attained the age of 45 years. Therefore he is now just 48 years of age and still has many years of activity before him.

He was granted a Short Service Commission in the Royal Air Force for three years on Apr. 25, 1923. During the War 1914-18, he was mentioned for valuable services as Sergeant Major at the Royal Military College and as Lieutenant, R.F.C., and again as Captain, R.F.C., while at the School of Aeronautics, Oxford.

Perhaps one of the most remarkable features about Capt. Wombwell's career is the number of great ceremonies in which he has taken part. As a Sergeant in the Rifle Brigade he was with a detachment at Queen Victoria's funeral in London. As a Staff Sergeant at the Royal Military College he paraded for King Edward's coronation, and in the same rank he took part in King Edward's funeral in London. Also he took part in King George's coronation in London in June, 1911.

As Sergeant-Major at the R.M.C. he took part in the presentation of Colours to the Gentlemen Cadets of the Royal Military College by King George V. at Sandhurst. And incidentally, while Staff Sergeant, he had the honour of being drill instructor to the late Prince Maurice of Battenberg.

Ceremonial Occasions.

In the Royal Air Force Flt. Lt. Wombwell personall trained all the men for Guards of Honour, Cenotaph parade and ceremonial parades of the R.A.F. which have taken pa in ceremonials in London since May, 1920, and with one ex ception he has commanded all the Guards of Honour.

A list of these Guards of Honour is of great interest, fo it embodies the history of the R.A.F. They include,—th opening of the Royal Academy in May, 1920, by the Duke o York; the visit of the Duke of York to Uxbridge, 1920 the wedding of the Duke of York, 1923; the visit of th Duke of York to the Royal Tournament, 1923; the openin



"LAW, ORDER, DISCIPLINE."—Flight Lieutenant Albert Wombwell.

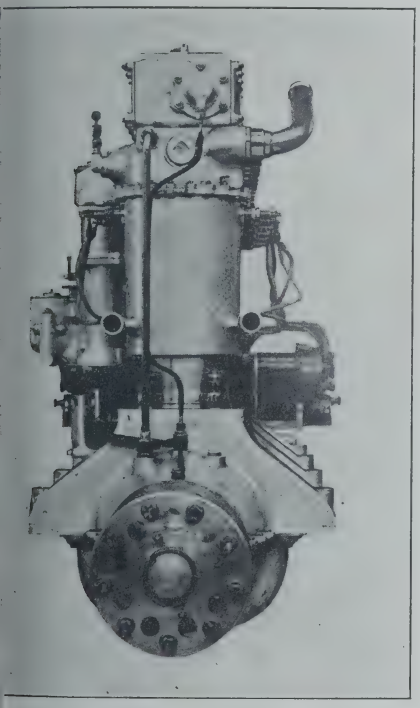
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SPECIFICATION.

Type		6 Cylinder in line, Vertical.
Cooling		Water.
Bore		152 m/m.
Stroke		190 m/m.
Normal r.p.m.	...	1,450.
Maximum r.p.m.	...	1,600.
Normal b.h.p.	...	305 @ 1,450 r.p.m.
Maximum b.h.p.	...	335 @ 1,600 r.p.m.
Petrol Consumption		.505 pts. (.286 litres) per h.p. hour.
Oil Consumption	...	.017 pts. (.009 litres) per h.p. hour.
Compression Ratio	...	5.4 : 1.
Weight, Dry		655 lbs. (297 kgs.)
Weight per h.p.	...	1.95 lbs.

ECONOMY.

We desire to draw special attention to the remarkably low petrol and oil consumption during Type Test of the "NIMBUS," which we believe constitutes a record.

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Works and Aerodrome: CROYDON, SURREY.
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of Wembley by His Majesty the King, 1924 (this was the first occasion on which the full dress for officers was worn on parade by the Commander of the Guard of Honour); the visit of the Duke of Connaught and the King of Italy to the Tournament, 1924; the opening of Wembley by His Majesty the King, 1925; the opening of the Royal Tournament by the Duke of Connaught, 1925; the visit of His Majesty the King and Marshal Foch to the Royal Tournament, 1925; the closing of Wembley by the Duke of York, 1925.

Flt. Lt. Wombwell also trained the R.A.F. detachment for the funeral of her late Majesty Queen Alexandra in London, and it is noteworthy that his two sons were on parade on this occasion in the Genadier Guards.

Apart from these Royal Guards of Honour, Flt. Lt. Wombwell has a wonderful record of training and commanding R.A.F. detachments on other ceremonial occasions. For example, he trained and commanded the R.A.F. detachments at the Cenotaph ceremonies on Nov.11, 1920, and 1921, and he trained the R.A.F. Cenotaph detachments for Nov. 11, 1922, 1923, 1924 and 1925, when senior officers were in command. It is noteworthy that on Nov. 11, 1924, R.A.F. drummers and trumpeters took part in this ceremony for the first time.

As distinct from ceremonial occasions, Flt. Lt. Wombwell has done a great deal of work for the R.A.F. in its appearances in public. Perhaps the most amusing was when he trained and commanded 200 "Arab tribesmen" as "Sheik Wombwell" at the R.A.F. Pageant in June, 1923. But prior to that he had trained and commanded 600 recruits for the Physical Training Display given at the opening of the R.A.F. Sports Ground at Uxbridge—now known as the Stadium.

In 1924 he trained and commanded the men for the Torchlight Tattoo at Uxbridge which was given for local charities on Aug. 21 and Oct. 8. But this performance was far exceeded by his extraordinary training of the recruits for the Torchlight Tattoo at Wembley.

In May and June, 1925, he had 100 recruits as torch-bearers in the "London Defended" display. But in August and October he had 400 recruits from the Depôt giving that display of physical training and torch manœuvring which was certainly the finest thing done publicly by any of the Services during the year. That display, for which Flt. Lt. Wombwell was entirely responsible, is alone sufficient to mark him as a man of extraordinary ability in handling other men.

A Personal Tribute.

No finer tribute to the work of the man whom we are to know in future as Captain Wombwell can be imagined than that written by an officer with whom Capt. Wombwell served for many years. The writer must remain anonymous, more especially as what he wrote was in a personal letter. One's only excuse for printing it is that it stands out as the best possible appreciation of one good soldier by another.

"There must be hundreds of Army officers who passed through Sandhurst during the time he was an instructor there who remember 'Pussy' as instructor, philosopher and friend, and he would find a friend or pupil in almost any mess of the British Army that he might enter.

"Although frequently accused of Prussianism there was in fact no kinder-hearted man of his position, and that I always consider was part of his great success in training men,—though strict and exacting on parade he was considerate and human, and off parade he was a father to the lads he trained.

"Having spent so much of his life in the Service he was steeped in *esprit de corps*, so that his work was for the Service always. It mattered not how exacting, how arduous, that work might be, it was always done thoroughly and conscientiously, an example of loyal service to which his success was largely attributable.

"The welfare of those under him was constantly before him, both in and out of barracks. His lads would always get the best grub, the best billet or the best arrangements in case of inclement weather. Every detail was thought out and every eventuality arranged for.

"As a sort of instance of that, during the Wembley Tattoo, before starting from Uxbridge each evening he would ring up the Meteorological Office for weather reports to decide whether to order great-coats to be worn.

"If there was anything wanted for the men which could be humanly obtained, it was only necessary to express a thought of it and it was done or obtained, whether strictly in accordance with regulations or not. Sports grounds and tennis courts for them were hardly planned before there was a party of men at it with the work half done.

"You know the history of 'Stiff's Bridge' which crosses the river and joins the old camp at Uxbridge to the new—It had been said that the distance was too great for squads to walk round in a certain time and we must have a bridge; and there was a bridge. It did not matter where the material came from, but there was a very stout bridge in a very short time. But the path was boggy, we must hav a road, and, rather like the fairy story, a road sprang u in the night. It was only necessary to express a wish ar the thing was done.

"It was, you see, his wonderful hold over his me whether on parade, on fatigue, working party or game He would get their confidence, he would explain to the what was wanted (and not leave them in the dark as many do) and that what they did was for the unit and th Force, and so he would get the best out of them and ke them happy and jolly. And on special occasions th hardly knew whether they were working or playing.

"He was an excellent organiser. Whether it was a b parade or a children's Christmas party, every detail w considered, from the exact dressing of a line of hundre of men to an orange for the smallest child. I think he h a special corner in his heart for children, and he alwa came to the Christmas cinema for the Uxbridge scho children to hear them laugh and shout.

"Wombwell was a very fine example of the loyal c soldier whose heart and soul were woven into the Servic and, in spite of his little faults, all have the greatest a miration for him and consider that the Air Force w greatly miss him and his services."

To those words no mere civilian can add anything. B writing merely as one who has known the Flying Servic from their beginning, one knows that one is expressing t feelings of thousands of officers and men when one sa that the departure of Pussy Wombwell is one of the mo regrettable things that has happened to the R.A.F. for a ve long time.

No man is indispensable. The whole existence of the Kin Services must depend on the fact that if any man goes can be replaced by somebody else. That is why men w excel in their jobs must be moved from time to time other jobs in which they are less effective. But it is a gr pity that the Service should dispense with one who has s so many years of activity before him and so many years experience behind him.

One can only hope that ere long some mere commerc person will find well-paid use for Captain Wombwell's t usual organising ability and his extraordinary capacity handling men. At any rate everybody will wish him ma years of life and much success in whatever occupation may adorn in the future.—C. G. G.

GLOUCESTERSHIRE SPORTSMANSHIP.

The Gloucestershire Aircraft Company Ltd., of Cheltenh have notified the Royal Aero Club that, with a view assisting the development of private flying they will g every facility to members of all flying clubs alighting on th aerodrome at Brockworth near Cheltenham. No landing f will be charged and all facilities will be given free of cost

The Gloucestershire Co. notify further that, owing to t large amount of experimental work in hand they will not able to take part in this year's Light Aeroplane Competiti They have, however, sent £100 to the Royal Aero Club wards the expenses of the Competition.

These actions are just what might be expected from good sportsmen who control the Gloucestershire Co., have spent so many tens of thousands of pounds in upholdi the prestige of British Aviation.

THE PRESENT POSITION OF AIRSHIP EXPERIMEN

On Thursday, Apr. 29, Lt.-Col. V. C. Richmond read paper on the present position with regard to Airship search and Experiment, before the Royal Aeronauti Society.

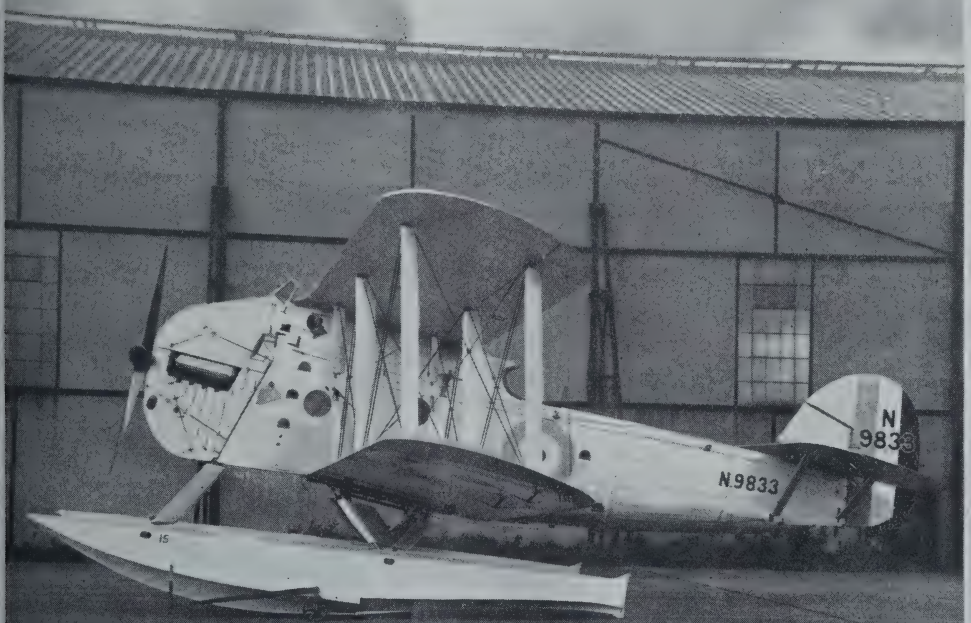
In this paper some brief account is given of the full-sc aerodynamic tests made recently upon R.33, of the resea work upon the stress distribution in the frame of a ri aidship carried out under the auspices of the Airship Stress Panel of the Aeronautical Research Committee, of the mo tests to confirm the theoretical work made by Dr. A. Sutton Pippaid, and some full-scale tests made on the n of R.33 at the mast, and on a portion of the frame of R.

Further there is some rather vague information as to structural features of the new 5,000,000 cubic foot rigid R.1 Incidentally the fact that Boulton and Paul Ltd. have take large part of the design of, and are carring out the ma facture of, the combined steel and duralumin members revealed.

The general conclusion reached by the author is tha very satisfactory degree of concordance exists between theories adopted in the design of the new ship, and the sults of the various check tests, and that there is every rea to believe that the new ships will prove to be very gr advances on anything previously produced.

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THE ROYAL AIR FORCE.

The London Gazette.

Apr. 27.

GENERAL DUTIES BRANCH.—The following Flg. Offs. are granted perm. comns. in this rank :—M. W. C. Ridgway (Jan. 1), E. N. T. Edwardes (Lt., R.A.) (Apr. 28). The following Plt. Offs. are promoted to the rank of Flg. Off. :—L. A. Egglesfield (Feb. 8); H. Walker (Feb. 8); A. C. Evans-Evans (Sec. Lt., Northants. R., T.A.) (Mar. 8). Flg. Off. on probation A. P. K. Hattersley is confirmed in rank (Mar. 30). The following Plt. Offs. on probation are confirmed in rank :—A. E. Hamilton (Mar. 22); J. E. Bolt, E. G. Cayley, R. E. Hall (Mar. 28); I. A. Anderson, F. F. Barrett, F. N. Garthwaite, D. J. Harrison, E. A. T. Murray (Mar. 30); W. G. W. Fahey (Apr. 7).

The following Flg. Offs. are transferred to the Reserve, Class A :—K. R. Thomas (Apr. 28); W. N. Lancaster (Apr. 30).

Flt. Lt. A. Wombwell (Lt., Lincs. R., R.A.R.O.) relinquishes his S.S. comn. on ceasing to be employed, and is granted permission to retain his rank (Apr. 25); Flg. Off. C. C. Musselwhite (Lt., Middx. R.) relinquishes his temp. comn. on return to Army duty (Apr. 24).

ACCOUNTANT BRANCH.—Flt. Lt. L. J. Marden is transferred to the Res., Class C (Apr. 21).

MEDICAL BRANCH.—Flg. Off. G. P. O'Connell, M.B., is promoted to the rank of Flt. Lt. (Apr. 23); Flt. Lt. J. B. Woodrow is transferred to the Res., Class D.2 (Apr. 24).

RESERVE OF AIR FORCE OFFICERS.—The following are granted comns. as Plt. Offs. on probation, General Duties Branch (Apr. 27) :—CLASS A.—D. P. Jones. CLASS C.—J. McA. Allan. Plt. Off. J. T. Newton reliquishes his comn. on completion of service (Apr. 20).

AUXILIARY AIR FORCE.—ACCOUNTANT BRANCH.—The following to be Plt. Off. :—No. 601 COUNTY OF LONDON (BOMBING) SQDN.—D. H. W. Arnot (Apr. 27).

Appointments.

Week ending May 3.

GENERAL DUTIES BRANCH.—Air Commodore T. C. R. Higgins, C.M.G., to H.Q., Iraq, for duty as Chief Staff Officer, 26/4.

Group Captain W. F MacNeece, C.B.E., D.S.O., D.F.C., to Air Ministry, Directorate of Operations and Intelligence, for Air Staff duties, 7/4.

Wing Commander A. C. Maund, C.B.E., D.S.O., to H.Q., Inland Area, Uxbridge, supernumerary, pending posting to H.Q., Air Defences of Great Britain, 26/4.

Squadron Leaders G. C. Bailey, D.S.O., to Aeronautical Committee of Guarantee, Germany, 28/4. R. S. Booth, A.F.C., to Royal Airship Works, Cardington, 26/4. E. R Manning, D.S.O., M.C., to Air Ministry, 24/4.

Flight Lieutenants J. Cottle, M.B.E., D.F.C., to No. 4 Arm. Car Coy., Iraq, 8/4. K. E. Ward, to No. 1 Sqdn., Iraq, instead of to H.Q., Iraq, as previously notified, 5/3. G. M. Moore, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 19/4. J. McG. Fairweather, D.F.C., to No. 30 Sqdn., Iraq, 11/4. J. F. T. Barrett, D.F.C., to H.Q., Iraq, 24/4. E. Thornton, to No. 28 Sqdn., India, 2/4. E. I Bussell, to C.F.S., Upavon, 21/4. H. A. Hamersley, M.C., to No. 12 Sqdn., Andover, 19/4. T. F. W. Thompson, D.F.C., to Air Ministry, 26/4.

Flying Officers T. B. Bruce, M.C., H. M. S. Wright and J. H. McC. Reynolds, to Station Flight, Duxford, 1/5. C. F. Roupell, to No. 3 Sqdn., Upavon, 4/5. F W. M. Matthews, to R.A.F. Cadet College, Cranwell, 1/5. H. S. Hobby, M.C., to Aircraft Park, India, 24/3. A. D. Davies, to No. 28 Sqdn., India, 24/3. A. C. Lamb, to R.A.F. Cadet College, Cranwell, 3/5. A. F. Scroggs, to C.F.S., Upavon, 20/4. F. W. M. Matthews, to remain at No. 3 Sqdn., Upavon, instead of to R.A.F. Cadet College, Cranwell, as previously notified. J. W. Bell, to Air Ministry, 9/4. H. E. E Weblin, to No. 8 Sqdn., Iraq, 11/4.

Pilot Officers E. J. Ellis, D. C. Sherman and W. A. Shorten, to Aircraft Depot, India, 12/3.

MEDICAL BRANCH.—Squadron Leaders W. A. S. Duck, O.B.E., to H.Q., Palestine Command, 1/4. R. A. G. Elliott, M.B., D.P.H., B.A., to Palestine General Hospital, 1/4.

Flight Lieutenant R. W. White, to R.A.F. Depot on transfer to Home Estab., 20/3. Flying Officer (Q.Mstr. Medical) B. Willshire, to R.A.F. Depot on transfer to Home Estab., 20/3.

ACCOUNTANT BRANCH.—Flying Officer J L. Armstrong, to Heliopolis Details, Egypt, 9/4.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident at Donibristle, Fife, to a Fairey Flycatcher of No. 406 Flight, Donibristle, Apr. 30, Nigel Hugh Portal, Lieut. R.N., Flg. Off. R.A.F., the pilot and sole occupant of the aircraft, was killed.

The Laurence Minot Memorial Trophy.

The Air Ministry announces :—A new trophy, to be known as the Laurence Minôt Memorial Trophy, has been presented by a donor who wishes to remain anonymous, in memory of the late Captain Laurence Minôt, M.C., Royal Flying Corps, who was killed on July 28, 1917, in air combat, whilst serving with No. 57 Squadron, Royal Flying Corps.

Competition for this trophy, which will be awarded annually to the crew of the bombing aeroplane which obtains the highest degree of accuracy in individual classification bombing practices for the current year, will be open to all bombing squadrons under the command of Air Officer Commanding-in-Chief, Air Defence of Great Britain.

The word "crew" covers the pilot of the aeroplane and the bomb aimer, whether officer or air gunner. The trophy will be held for one year by the unit in which the winning crew was serving at the time that the trophy was won.

The first award will be made on the results of classification practices in 1927.

Grog Money.

The Daily Telegraph of May 1 states :—

Fleet Orders notify that men victualled by the Army or the Royal Air Force, provided they do not elect, if permitted, to receive such issues of spirit or other alcoholic liquor, as may be made either regularly or intermittently, may be paid grog money, subject to the provisions laid down in the regulations, the option mentioned in Clause 2 thereof having effect in their case from the first day of the month subsequent to the date of return to their ship or naval establishment.

Sir Samuel Hoare at the Royal Academy.

Replying for the Royal Air Force to the toast of "The Imperial Forces" at the Royal Academy Banquet on May 1, Sir Samuel Hoare, the Secretary of State for Air, said that to the same toast twelve months ago. Its training was constantly developing, and every effort was being made to take full advantage of the teachings of British science in its equipment.

The R.A.F. was the greatest Flying Force in the world. Although in size it was far from being the greatest Air Force in the world, its actual flying hours had exceeded not only proportionately, but absolutely, the flying hours of any other Power. Those critics who spoke of an Air Force tied to the ground should remember this conclusive and unanswerable fact.

Sir Samuel Hoare went on to say that he thought that means of economy could be found in the great mobility of Air Power. The first step in this direction might be found in the organisation of Empire air routes along which Air Force could be moved quickly and safely from one end of the Empire to the other.

We were beginning to send Service Units on long-distance flights in the ordinary course of their training. Such a flight was now more than half completed between Cairo and Cape Town. Four Service machines had flown in formation across the African continent, a distance of 5,289 miles, and had already started without mishap on their return. The



A HIGH PERFORMANCE BOMBER.—The Handley Page Handcross high altitude bomber (650 h.p. Rolls-Royce Condor engine).

THE MODERN TRAINING AEROPLANE



THE DE HAVILLAND
"MOTH"

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¶ The De Havilland "MOTH" has been designed entirely in the light of modern experience, and fulfils in every respect modern training requirements. Its controls are light, effective and straightforward at all speeds. It is fitted with a 4-cylinder air-cooled engine, which is as reliable as that of an automobile. Its fuel and oil consumptions for school work are less than four gallons and one pint per hour respectively.

¶ For convenience and easy transport it can be folded, and it is so light that it can be handled on the ground by one man.

¶ Both aircraft and engine are so simple to maintain that an owner pilot can keep a "MOTH" in flying order without skilled assistance.

¶ Every standard "MOTH" is supplied with a British Air Ministry Aerobatic Certificate of Airworthiness.

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YORKSHIRE AERO CLUB,
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DE HAVILLAND SCHOOL OF FLYING, EDGWARE,

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homeward journey would not end in Egypt but would bring the machines and their crews to these shores.

As a further example of the mobility of Air Force, Sir Samuel Hoare described the search for Captain Estevez and his mechanic of the Spanish Flight. Twenty-four machines from the neighbouring commands covered 16,000 square miles of desert in the course of the search. Nothing but aeroplanes could have saved these lives.

For the O.C. Station Sports.

"The Sports Club Secretary's Vade Mecum." By Flg. Off. A. J. Adams, R.A.F. Gale and Polden Ltd., Aldershot. 7s. 6d. net.

Mr. Adams, the able Secretary of the R.A.F. Athletic Association, has produced a book for Sports Club Secretaries which makes one wonder how on earth Sports Club Secretaries managed before it was published.

The book contains full information on all subjects connected with the formation and organisation of a Sports Club, and all the necessary forms for recording the activities and constitution of the Club. There are a number of tips for the maintenance of sports grounds and gear and accessories, and accurate instructions, with plans, for laying out sports grounds and organising athletic meetings and cross-country races.

The book is so arranged that in addition to being a mine of information to the club or association Secretary, it will also be a complete record of the activities of his own Club or Association.—C. M. MCA.

Association Football.

R.A.F. v. *Notts County*:—On the evening of Apr. 26, the R.A.F. played their last match of the season against Notts County F.C. The whole proceeds of the gate (£61 18s.) is to be paid to the R.A.F. Memorial Fund. The match was played at Cranwell, and resulted in a win for the R.A.F. by 2 goals to 1. The directors of the Notts County Club kindly brought their team at their own expense to play this match. This year they brought their full League team, making only one alteration from the team that had played against Sunderland.

Of the Air Force team, Underhill stood out as the best player, tackling hard, and breaking up repeatedly the attacks on the right wing. Moran in goal gave a brilliant display; his anticipation being particularly good. Morris bustled his way through first, on the wing, and in the second half, at inside left, scoring a very good goal. Fretwell was generally there when required, and Dickson, Williams, Francis, Atkin, and Bangey—all of Cranwell—became better and better as the game went along. Jackson at centre-forward was a little slow, but will no doubt improve as he plays in good football.

During the first half, play was rather in favour of the visitors, who crossed over with the score 1—0 in their favour. In the second half, the Air Force, playing "full out," equalised after 15 minutes, with a good shot by Morris and Francis, ten minutes before time, scored the winning goal.

AIR AFFAIRS IN PARLIAMENT.

FIREPROOF TANKS.

In the House of Commons on Apr. 28, in reply to a question by Mr. Hannon, the Secretary of State for Air said that the production for use in Service aircraft of a petrol tank which would be proof against fire had been the subject of many experiments and these experiments were being, and would be, steadily pursued. There were, however, considerable technical difficulties which had not been overcome and he could not accept Mr. Hannon's suggestion that a type of fireproof tank suitable for Service use was already in existence. The importance of producing a fireproof tank was fully realised.

AN ARMY VIEW.

The following views on the next war have been taken from a personal letter written by a retired officer of Indian Cavalry who served with distinction in France during the War 1914-18 :—

I am one of those who believe the next war will be settled in the air : I fail to see how a nation can win if it loses air command.

One can't have every form of insurance but I'd see that we were covered so far as attack by air was concerned, and would allow the Air Force preferential treatment as regards expenditure, cutting down the Navy and Army Estimates if necessary. There ought to be only one *Minister* for War (why be hypocritical and call it Defence?) and one Chief of the War Staff with sub-chiefs for each arm.

I am dead against the Air Force being anything but a separate one. In another 25 years it will not be a case of the Army issuing orders to its air commander, but what's left of the Navy, and the Army—troops will always be required to occupy territory—will have their orders dictated by the Air Force. At present there are so many interests to be considered that the Air Force runs the risk of starvation.

Further, socially, the two older Services exercise all kinds of pressure detrimental to unquestioned supremacy in the air very much of the same nature as the "Bridge Gang" in the Navy's recent attempt to make its engineer service again a subordinate one.

I belong to a branch of the Army which traditionally is violently conservative—to the extent of cutting off its nose to spite its face, a form of *hari-kari* which has been attended with considerable success, as a great deal more than half has been abolished—and yet I believe that a large force of cavalry directed and supported from the air would be infinitely more effective than a fleet of land tanks directed from the air, for this reason, that the mounted arm is much more elastic and diverse in the purposes to which it can be put.

Even now I hear Army officers maintain that they should direct the activities of the Air Force allotted to it. This is absurd. The air commander must direct the activities of the cavalry, and be sufficiently senior to do so.

THE HANDLEY PAGE HANDCROSS.

The Handley Page Handcross is a single-engined high altitude day bomber fitted with the 650 h.p. Rolls-Royce Condor engine.

It is a normal biplane, having wings of equal span but unequal chord. The top plane is flat but the bottom planes are set at a slight dihedral angle. The fuselage has accommodation for one pilot situated under the centre section, and one gunner-bomber in a cockpit aft of the planes.

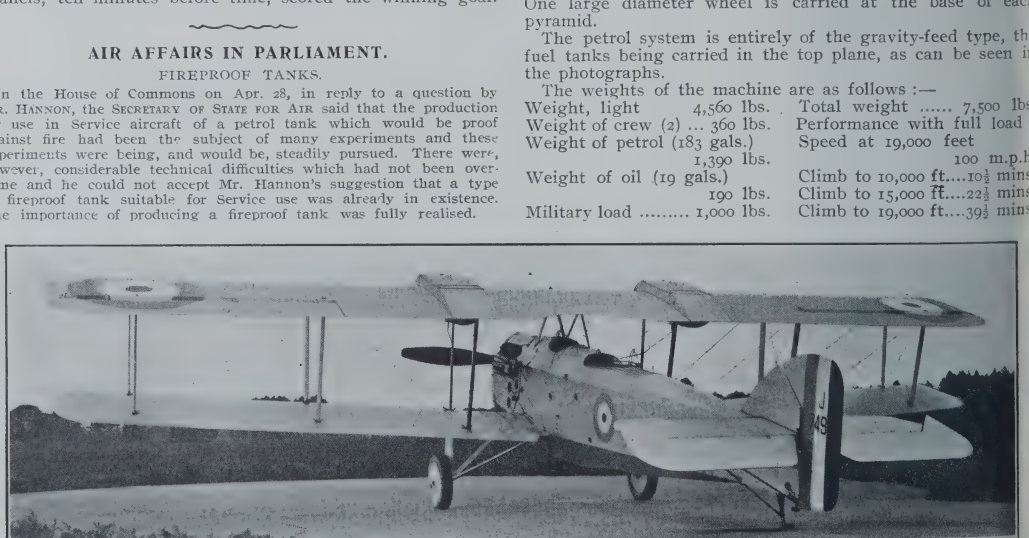
The pilot's range of vision is excellent. Bombs are carried under the fuselage, inside a streamline cowling.

The undercarriage is of the divided type, each unit consisting of one oleo-leg attached under the leading edge of the bottom plane, and a rigid steel tube Vee, the apex of which is attached to the base of the oleo-leg. The upper ends of the Vee are hinged to the bottom longeron of the fuselage. One large diameter wheel is carried at the base of each pyramid.

The petrol system is entirely of the gravity-feed type, the fuel tanks being carried in the top plane, as can be seen in the photographs.

The weights of the machine are as follows :—

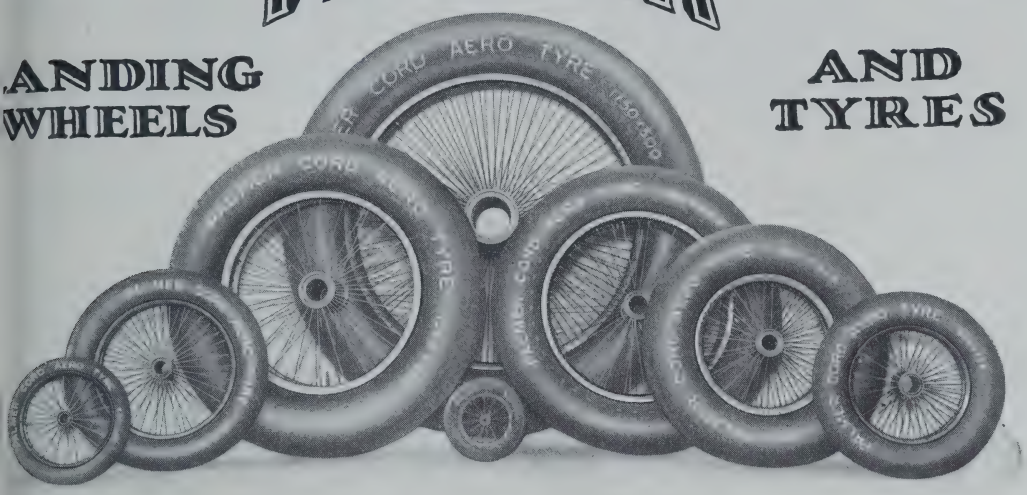
Weight, light	4,560 lbs.	Total weight	7,500 lbs.
Weight of crew (2) ...	360 lbs.	Performance with full load :	
Weight of petrol (183 gals.)	1,390 lbs.	Speed at 19,000 feet	100 m.p.h.
Weight of oil (19 gals.)	190 lbs.	Climb to 10,000 ft....	10½ mins.
Military load	1,000 lbs.	Climb to 15,000 ft....	22½ mins.
		Climb to 19,000 ft....	39½ mins.



THE HANDCROSS.—A three-quarter rear view of the Handley Page Handcross bomber (650 h.p. Rolls-Royce Condor engine).

PALMER

LANDING WHEELS AND TYRES



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †*Wheel No. 169 is fitted with Ball Bearings.*
Grease gun equipment is now a standard fitting on all wheels.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

SPAIN AND THE ROYAL AIR FORCE.

By "Boyd Cable."

In last week's issue of The Aeroplane there appeared the Order issued by the Air Minister quoting the telegrams exchanged between His Majesty the King of Spain and His Majesty the King, but while that special Order will reach the whole of our Air Force, it can only feebly reflect the wave of national feeling which swept over Spain when the news was made known there of the successful search for the Spanish aviators who were lost in the Desert between Amman and Baghdad.

The British press has failed to convey even a faint indication of the depth and fervour of Spanish feeling on the subject, and if for that reason alone, there is the more need that fuller facts should be made known to those who have the interests of International Aviation at heart,—to say nothing of those who may welcome a national gesture of sympathy and friendship which in these days does not too often come our way from the Continent.

The telegram from His Majesty the King of Spain was in no sense an official or formal courtesy. It was the outward and visible sign to us of a feeling which flamed throughout Spain, and was much more remarkably demonstrated in a variety of ways.

It will be remembered that at the time of the search two of our officers lost their lives in a crash, and Spain's gratitude for the rescue of her aviators was mingled with expressions of condolence for our loss—the volume of those expressions by no means lessening when it became known that the crash had no connection with the search.

In addition to sending the telegram which was quoted in our Air Minister's Special Order, the King of Spain called personally at the British Embassy in Madrid to ask that his and the Nation's thanks should be conveyed to London, and at the same time he sent a telegram to Cairo thanking our Air Force for "the admirable work done with such fortunate results" and offering his sympathy for "the loss of the two gallant British aviators."

General Primo de Rivera also called at the Embassy, as did the Garrison of Madrid and innumerable private and official personages, representing not only the services, but the business, social and professional world.

The Medical students organised a demonstration to the Embassy, and when the news was received of our machine's crash, another torrent of callers hurried to the British Ambassador to leave cards, while signs of mourning were freely displayed and the Spanish Royal Aero Club was draped in crape and black.

The demonstrations were not confined to the capital. In Barcelona the Civil Governor, at the head of a deputation, called on the Consulate requesting that messages should be conveyed to the British Government and Air Force. At Cadiz a telegram was sent to our King, and a stream of callers, representing various corporations, left cards and messages. At Huelva, Cartagena, Malaga, and scores of the cities and town and even villages throughout the length and breadth of Spain, British Consulates or officials, or, failing these, British business houses, received deputations and sometimes whole processions desiring that "England should receive the gratitude and sympathy of Spain."

The Spanish Press echoed the popular feeling, and indeed encouraged it by repeating in the fullest detail the four days and nights of continuous effort of the British aviators to find the lost Spaniards, the finding of the one and continued search for the other, the speedy removal of the two men to the British Service hospitals, the care and attention lavished upon them there. It was pointed out that the two men owed their lives entirely to the friendly and comradely spirit of our flying men, not only because of the search they made, but also because it was due to their urgent advice that food and water for four days instead of one were carried on the trip across the desert.

Finally after the news was received that the two Spaniards had been found and conveyed to hospital, General Primo de Rivera, in a speech at the Royal Aero Club, referred in the most glowing terms of praise to the action of our Air Force. He said :—

> In the air, political frontiers disappear and a sentiment of universal brotherhood takes their place, as we see in such case as the present. The self-sacrifice, the heroism, the tireless activity displayed by the British flying men in their search for Captain Estevez and his mechanic, prove again the noble humanity of the English people and show the cordial relations between England and Spain.
>
> There is in that foreign Power an exemplary capacity for serene self-sacrifice, which was displayed years ago in such a tragedy as that of the *Titanic*, and of which we see to-day an ethical continuation in this defying death to alleviate the sufferings of others.
>
> All Spain has thrilled with emotion and gratitude at the action of the gallant British flying men, and the act of State by which our Ambassador has expressed, at the special command of the Government, the gratitude of Spain has been the tribute not only of our Government but of the whole Spanish nation.

This speech was published broadcast through Spain, and was echoed in every section of the Press with even warmer terms of praise and gratitude "so intent and so fully shared by every class of the community" as *La Nacion*, one of the leading papers of Madrid, puts it. One could continue to quote glowing tributes of this sort enough to fill this issue of The Aeroplane, but enough has been said to indicate the intensity of the feeling in Spain and the full-voiced expression of it.

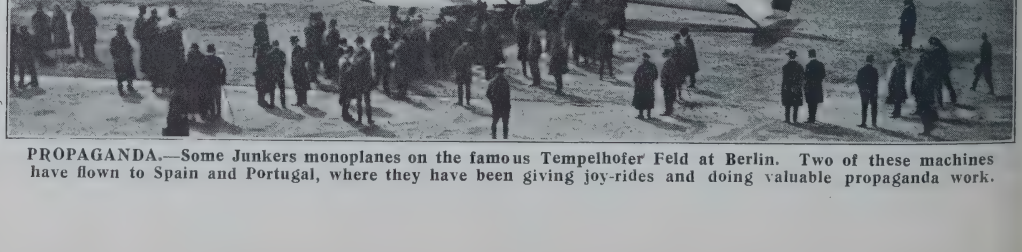
It is very certain that the Royal Air Force in general, and those who carried out the search and rescue in particular, would be the very last to want anybody to bang the big drum in calling attention to their work. They, like most of us, would regard it as nothing out of the way. And they may wonder why, even if Spain does think fit to make such a large fuss of such a small affair, any British journal should do the same.

It is from no wish to pat on the back the men concerned, however, that attention is drawn to the gratitude of Spain, but rather because it is no more than right that we should all be aware and rather appreciative of what is clearly a genuine and national sentiment of gratitude.

The Spanish Dictator spoke no more than truth when he said that the air has no political frontiers. It has for many centuries been a British tradition that a seaman in distress has no nationality except that of the brotherhood of the sea, and that a brother mariner in difficulties must be relieved or rescued by British seamen at no matter how grave a risk or cost of life and limb. [Those gallant German and American seamen who did such fine rescue work in the Atlantic recently gave proofs of the truth of these words.—C. G. G.]

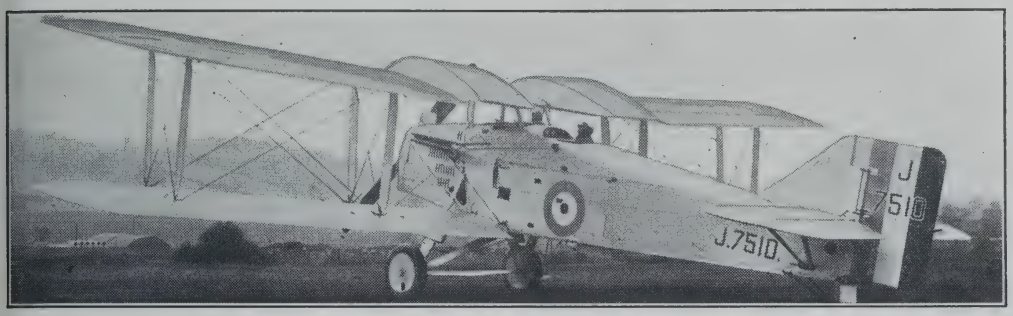
We, as a people, have for some time taken it for granted that the same tradition and principle had extended from the sea to the air.

But if the Spanish people think that perfectly ordinary proceeding anything wonderful, one is quite confident that Spanish flying men will regard it as little more than the normal duty of the "brotherhood of the air." And they may take it as certain that our own Royal Air Force are serenely satisfied that if the positions were reversed and the Spanish Aviation Service were called upon to make an equal, or a very much greater effort, to help British flying men, Spanish aviators would be just as ready to make it. One cannot say more. One cannot say less.



PROPAGANDA.—Some Junkers monoplanes on the famous Tempelhofer Feld at Berlin. Two of these machines have flown to Spain and Portugal, where they have been giving joy-rides and doing valuable propaganda work.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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THE ROYAL AERONAUTICAL SOCIETY.

The following are the names of the Members of Council of the Royal Aeronautical Society for the year 1926-27 :—

Captain P. D. Acland, Mr. Griffith Brewer, F.R.Ae.S., Wing Commander T. R. Cave-Browne-Cave, C.B.E., F.R.Ae.S., Sir Mackenzie Chalmers, K.C.B., Mr. C. R. Fairey, C.B.E., F.R.Ae.S., Captain G. T. R. Hill, M.C., A.F.R.Ae.S., Mr. H. B. Irving, A.F.R.Ae.S., Major A. R. Low, F.R.Ae.S., Mr. W. O. Manning, F.R.Ae.S., Major R. H. Mayo, F.R.Ae.S., Lt.-Col. M. O'Gorman, C.B., Mr. F. Handley Page, C.B.E., F.R.Ae.S., Major G H. Scott, C.B.E., A.F.C., A.F.R.Ae.S., Col. the Master of Sempill, A.F.C., A.F.R.Ae.S., Mr. T. O. M. Sopwith, C.B.E., A.F.R.Ae.S., Mr. C. W. Tinson, F.R.Ae.S., Mr. H. T. Vane, Sir Henry White-Smith, C.B.E., Mr. H. E. Wimperis, F.R.Ae.S., Mr. R. McKinnon Wood, F.R.Ae.S.

ELECTIONS : The following have been elected in the various grades of the Society :—

HONORARY FELLOW : Mr. F. W. Lanchester.

FELLOWS : Mr. F. Koolhoven, Mr. W. O. Manning, Mr. C. L. Lawrance, and Mr. C. W. Tinson.

ASSOCIATE FELLOWS : Mr. L. G. Brazier, Squadron Leader J. A. C. de Courcy, Mr. J. F. Craig, Mr. N. Davey, Mr. G. H. Dowty, Mr. J. Durward, Mr. A. N. Jackson, Mr. G. E. Page, Dr. D. R. Pye, and Mr. H. O. Sommer.

ASSOCIATES : Mr. F. W. Atkinson, Mr. R. Bance, Captain A. G. Bond, Mr. E. E. H. Evans, Mr. E. Hopkins, Mr. F. Hoult, Mr. W. G. Kimber, Mr. C. A. Mann, Mr. S. S. Martin, Mr. W. Moss, Mr. A. D. Patwardhan, Flg. Off. R. L. Ragg, Mr. J. Reid, Commander I. B. B. Tower, Mr. C. J. Wood.

STUDENTS : Mr. E V. Dolby, Mr. N. J. Hancock, Mr. E. C. Harvey, Mr. T. Tanner, Mr. E. T. J. Weston, and Mr. H. F. Winny.

MEMBERS : Lt.-Col. J. Barrett-Lennard, Mr. H. S. Daniels, Mr. R. W. Green, and Mr. S. Humphries.

The Gold Medal of the Society has been awarded to Mr. F. W. Lanchester in recognition of his valuable and pioneer services to aviation. Mr. Lanchester has also been made an Honorary Fellow of the Society.

The Coventry Branch of the Royal Aeronautical Society recently held their inaugural lecture on "The Auto-Giro." The lecture, which was attended by over 100 members, was delivered by Mr. W. S. Farren, A.F.R.Ae.S., with Major F. M. Green, F.R.Ae.S., in the chair.

ASSOCIATES : A number of applications for membership in the newly-formed grade of Associateship have been received. This new grade has been formed to enable ground engineers, inspectors and examiners of aeronautical materials, those holding a Pilot's B licence, those holding a Navigator's Certificate, those who have a commissioned or permanent rank in the General Duties Branch of the Royal Air Force, and those who have held a position equivalent to foreman for a period of not less than three years, to take advantage of the facilities offered to them by the Society. The subscription for this grade has been fixed as low as possible—£1 1s. a year—and Associates have all the usual privileges of members. There is no entrance fee.

THE NIMBUS TYPE TEST.

The A.D.C. Aircraft Co.'s 300/330 h.p. Nimbus aero-engine —which was described in some detail in this paper some months ago—completed its officially observed type test towards the end of last month, and is therefore now "airworthy" for all civilian flying purposes in this country. In addition to this official test, the Nimbus has completed some hundreds of hours of running both on the bench and in the air.

The Nimbus engine has the advantage of simplicity, low resistance, ease of installation and accessibility associated with the vertical six-cylinder type, combined with a weight per h.p. of under 2 lbs. usually associated only with engines of a more complex type. Over and above this it has shown on the type test a remarkably low combined fuel and oil consumption.

On the 50 hours of the type test at 9/10 full power (270 b.h.p.) the average fuel consumption was .505 pints, or .474 lbs. per b.h.p. hour, and the oil consumption .017 pints or .019 lbs. per h.p. hour, and this combined consumption of .493 lbs. per h.p. hour is believed to constitute a record for engines under type-test conditions.

At the end of the 50 hours' endurance test the engine began its one hour's full power test, giving 327.5 b.h.p. at 1,600 r.p.m. The output increased, and at the end of the hour the engine was holding 335.6 b.h.p.

THE CIRRUS HANDBOOK.

A.D.C. Aircraft have recently issued a handbook on the care and maintenance of the Cirrus 27/60 h.p. engine. As the Cirrus engine is of a type which should very particularly appeal to the private owner, this handbook has been very carefully compiled to be easily understood by those who are not expert engine mechanics, and to give the most complete guide to the processes of normal running, and maintenance.

The book is excellently illustrated with photographs and diagrams, and should enable any intelligent person with mechanical instincts properly to understand the Cirrus. That this exposition occupies only some twenty-four pages is fair evidence of the simplicity of this excellent engine.

THE ROYAL AUSTRALIAN AIR FORCE.

Wing Cdr. W. H. Anderson and Flt. Lt. W. D. Bostock left Australia on Mar. 21 to attend a course at the Staff College, Andover.

At the end of the present Staff College course Wing Cdr. S. J. Goble, C.B.E., D.S.O., D.S.C., will take over the duties of Commonwealth Liaison Officer at the Air Ministry, *vice* Sq. Ldr. Brown, who at present holds that post.

Flg. Off. G. Packer, R.A.A.F., who is attached to the R.A.F. for a photographic course is another Australian officer now in this country.

LONG-DISTANCE FLIGHTS BY SOVIET AIRCRAFT.

The official *resumé* of commercial and technical information for March and April, 1926, compiled by the Directorate of Civil Aviation, Air Ministry, contains the following information from Soviet Russia :—

Proposed long-distance flights.—A special commission under the presidency of Comrade S. S. Kameneff, inspector of the Workmen's and Peasants' Red Army, is at present engaged in organising a series of long-distance flights during 1926, from Soviet Russia to the Near East and to Western Europe.

The proposed flights to Western Europe are :—(1) Moscow—Königsberg—Paris—Rome—Vienna—Prague—Warsaw—Moscow, a distance of 7,150 km. (2) Moscow—Berlin—Frankfurt-on-Main—Paris—Frankfurt-on-Main—Königsberg—Moscow, a distance of 6,000 km.

The proposed flights to the Near East are :—(1) Moscow—Kharkoff—Sebastopol—Angora, 1,870 km. (2) Moscow—Rostoff-on-Don—Mineralni—Vodi—Baku—Teheran, 3,000 km.

The flights to Western Europe will be in return for the visits of foreign airmen to Soviet Russia and also to show the Western Powers the progress in Soviet aircraft construction. The flights to the Near East will demonstrate Soviet Russia's nearness and friendly feelings to the peoples of the Near East.

For all the proposed flights only Soviet-built aircraft and engines will be used.

The Civil Aviation Department, the Dobroliot, and a number of organisations interested in flying are responsible for the organisation of the flights.

AN AMERICAN AIRWAY ANNIVERSARY.

On Apr. 23, there arrived at THE AEROPLANE office a letter from Mr. Bill Stout of the Stout Metal Airplane Company, Division of the Ford Motor Company, announcing that the said letter had come through the air on the flight of the 'plane which marked the beginning of the second year of air-line operation out of the Ford Airport at Dearborn, Michigan.

This anniversay is worthy of note because in that first complete year of operation the Stout metal airplanes with which the Ford Airways are equipped have between them made over 1,000 flights, aggregating in distance more than ten times the journey round the World. And all this flying had been done without an accident of any kind.

Such an achievement is one of which any method of transport might well be proud, and it bears out Mr. Alan Cobham's remark to the Overseas League that in these days, where air lines are concerned, the one thing about which nobody seems to have any doubt is the reliability of the aeroplanes and their engines. The undependable factors are weather and the ground organisation. Mr. Stout says in his letter that next year will see further perfecting of safety and load capacity with the hope of putting the American Industry first in the air.

One wishes all good to the American Aircraft Industry, and, though one hopes to see the British Aircraft Industry maintaining its position as the first in the air, one hopes that American progress will be such that it will stir up our own designers and constructors to still greater efforts. The old adage that competition is good for trade is as true in the air as it is on the ground.—C. G. G.

THE U.S. NAVAL AIR PROGRAMME.

An *Exchange* message from Washington in *The Morning Post* of Apr. 13 states :—

The House of Representatives has passed the Butler Bill authorising a five-years' building programme for the Naval Air Service providing for 2,200 machines and two dirigibles, each three times the size of the *Shenandoah*. The measure is the first aviation legislation resulting from the controversy created by Colonel Mitchell. The Voting was 297 for to 39 against.

AMERICAN NEWS.

Unfortunately there is never sufficient space available in THE AEROPLANE to deal at all adequately with American news. In the present state of the development of international aviation American progress and American aeronautical politics are very nearly as important to us in this country as are our own. Therefore one strongly recommends everybody who desires to be well informed on international developments to read regularly Mr. Lester Gardner's paper, *Aviation*, which is the leading American aeronautical publication.

The address of *Aviation* is 225, Fourth Avenue, N.Y. The proprietor will be pleased to send specimen copies to readers of THE AEROPLANE.

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THE FLYING CLUBS.

The London Aeroplane Club.

Flying was possible on only two days during the week ending May 2, and the flying time was 7 hrs. 10 mins.

The following members had flying instruction :—Sir John Rhodes, Bart., E. D. Moss, A. Lees, A. R. Ogston, R. J. Bevington, Dr. Wall, E. Wallcousins, W. E. P. Johnson

The following members made solo flights :—J. S. M. Michie, P. G. Lucas, W. Hay, A. R. Ogston, R. J. Bevington, E. P. Brough.

The third D.H. Moth, G-EBNP, was handed over to the Club on Friday, Apr. 30.

G-EBLI, which has been in constant use since January last, has been taken out of service for overhauling and for dual ignition to be installed in the engine.

The total flying for the month of April on the one Club machine was 69 hrs. 45 mins.

Mrs. Eliott Lynn, on the Moth which she runs conjointly with Mr. Jones, completed 52 hrs. 25 mins. during April.

[Owing to the State of Emergency no other Club Reports were received this week.—Ed.]

AERONAUTICAL METEOROLOGY.

["Aeronautical Meteorology," by Willis Kay Gregg. The Ronald Aeronautical Library. The Ronald Press Co., New York. Price $2.50.]

This, the first to appear, of a series of aeronautical text-books, deals with a subject of prime importance, and is written by one who has obviously sound qualifications for dealing with his subject. The book gives an outline of the present state of knowledge of the physical laws concerned in the production of weather which—so far as one who is not a meteorological specialist can judge—is in accordance with the accepted opinion of European authorities. As the book is of trans-Atlantic origin, however, applications and examples are mainly drawn from American conditions, and the work, therefore, though it may safely be taken as a guide to principles, probably requires to be regarded with some caution as a practical handbook on forecasting in Western European conditions. The work is well printed and illustrated, and is couched in language which can easily be followed.

TWO GOOD TEXT BOOKS.

["Aircraft Instruments." By H. N. Eaton, K. H. Beig, W. G. Brombacher, W. W. Frymoyer, H. B. Henrickson, C. L. Seward, and D. H. Strother. Price $5.00 net. "Balloon and Airship Gases." By C. de Forest Chandler and W. S. Diehl. Price $4.00 net. Both being volumes of the Ronald Aeronautic Library. Published by the Ronald Press Company, New York.]

In the review published hereinbefore of the first volume of the Ronald Aeronautical Library received here (Aeronautical Meteorology, by Gregg), it was said that the book in question was a sound guide to the principles of meteorology, but that its value on this side of the Atlantic was limited by the widely different local climatic conditions of North America. No such limitation can be alleged against either of the two volumes now in question.

The first volume is written by a series of authors all of whom are said to be on the staff of the Aeronautic Instrument Section of the U.S. Board of Standards, and who are obviously very thoroughly acquainted with both the theoretic and the practical aspects of their subject. The book is r mere descriptive catalogue of typical instruments. It divided into sections dealing with instruments intended f specific types of measurement—as for example, Altitude an Climb measurement, Air and Ground speed measuremen Direction and Position Instruments, Navigating Instrument etc., etc.

In each section the various quantities to be measured a clearly defined, the general principles underlying the variou type of instrument, and the laws governing their behavio are set out, typical examples of such instruments are d scribed, their inherent defects, probable inaccuracies are di cussed and methods of testing and calibrating are describe

Although as is natural some of the instruments describe in detail are relatively unknown in this country, the trea ment of the different classes is sufficiently broad and full t be of direct practical value to any user of instruments whic are within the scope of the work. As a guide to the principle and practice of the methods of measurement available f aeronautics, the book is of very great value.

The second work is in two sections. The first by Mr. d Forest Chandler deals with the production, compression an storage of Helium and Hydrogen on practical lines. Thi section appears to be both complete and accurate. The re maining section by Mr. W. S. Diehl, deals purely with th Physics of Gases in general, without special reference to th two gases particularly discussed in the earlier section. A may be expected from Mr. Diehl, this section is excellentl arranged, compact, up-to-date, and singularly complete.

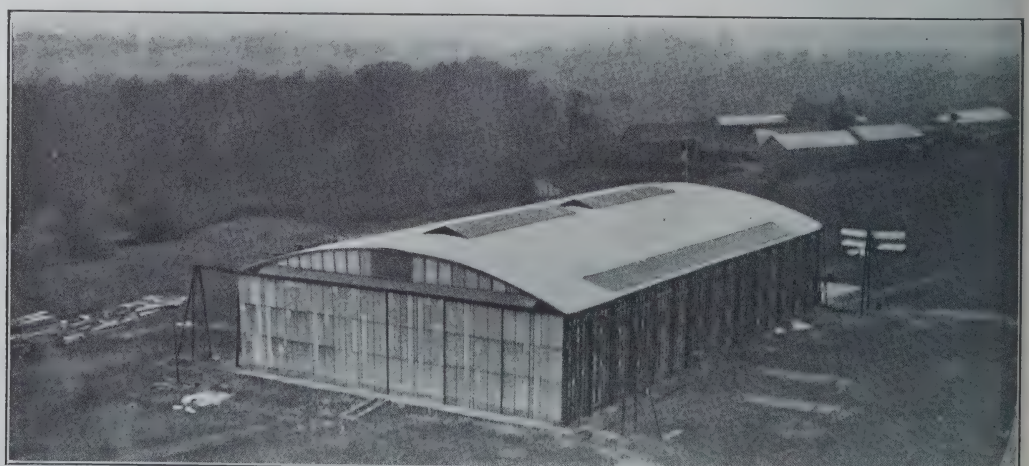
BALLOONS AND AIRSHIPS.

["The Science of Flight and Its Practical Application"— Vol. I, "Airships and Kite Balloons." By Capt. P. H Sumner. London, Crosby, Lockwood and Son. Price 16s net.]

It would appear from the introduction of this work that th author has the intention of covering in two volumes the whol of the very wide field which comes within the scope of hi title. In the first volume which alone is at present availabl he confines himself to lighter-than-air craft, and attempts t deal with their history, their basic principles, their practica construction, further to give descriptions of all the better known types of airship and kite-balloon which have been pro duced up to date.

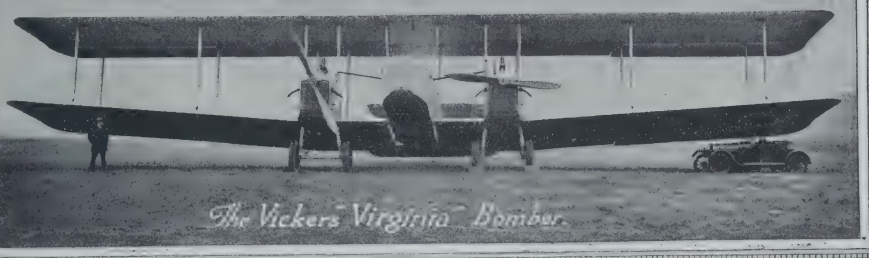
It is very evident from the contents of this volume tha Capt. Sumner has a very large fund of practical knowledg concerning lighter-than-air craft. Unfortunately, like so man of those who have large and detailed knowledge of som specialised subject, he does not possess any marked gift fo expressing that knowledge in an orderly and logical manne which will be clear to those who know less of his subjec than he does himself.

The book contains much interesting and useful informa tion, and should be of considerable value to those who have a fairly well-ordered general knowledge of the subject, and so will be enabled to sort out items of detail and put them into proper relation one to another. But as an introduction to the subject, the work may be found a little confusing.



THE HOME OF THE LANCASHIRE AERO CLUB.—The Avro Co.'s big shed occupies most of the picture. In it the Club's Moths are housed, by courtesy of A. V. Roe and Co. Ltd., since the Club's own Bessonneau was disintegrated by a gale. One of the Club Moths is seen on a corner of the aerodrome, with a 14th-Century farm-house as background.

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STOP PRESS NEWS.

[These pages of "The Aeroplane" have been made up afresh just before going to press in order to bring the news up-to-date.—Ed.]

EUROPE—AMERICA VIA THE NORTH POLE.

On May 11 the airship Norge of the Amundsen North Pole Expedition left King's Bay, Spitzbergen, at 10.10 hours in an attempt to fly over the North Pole to Alaska. At 02.00 hours on May 12 the airship was reported to have passed over the Pole under excellent flying conditions. Forty-five hours after she had left Spitzbergen the Norge was sighted at Point Barrow, the northernmost point of Alaska.

For roughly thirty hours after she had signalled her passage over the Pole the airship was "lost" by the Press, owing to the fact that no wireless station had been able to pick up any messages that may have been sent out. Although all wireless traffic had been suspended in Alaska to avoid possible interference and jamming of the airship's radio messages nothing was heard until an undecipherable message was picked up at Point Barrow by the wireless operator of the Detroit (Capt. Wilkins) Arctic Expedition.

It appears that the Norge flew straight across the Polar basin without divergence from her predetermined route at a steady 50 miles per hour.

Eventually the airship landed at Teller, Alaska, 75 miles north of Nome.

The voyage from King's Bay to Teller occupied 71 hours for the distance of 2,700 miles. Owing to arctic snowstorms and spring fog twenty-five hours elapsed from the time she was sighted off Point Barrow until her arrival at Teller.

According to reports from Nome no land was discovered in the unexplored territory between the North Pole and Point Barrow.

The Norge is an airship of 640,000 c. ft., and was designed by Col. U. Nobile for the Italian Government. Except for slight modifications to the gas valves in order to safeguard against interference by ice, the ship was perfectly standard.

During the flight members of the crew were compelled to keep constant watch over the functioning of the valves. Curiously enough, no trouble was experienced with accumulation of snow on the envelope.

The greatest danger during the flight was entirely unforeseen. When the airship passed through the fogs, ice which had formed on the rigging of the gondolas and on the gondolas themselves dropped off in pieces which the propellers caught up and shot through the fabric of the ship. For hours the crew was continuously engaged in patching holes in the fabric covering the keel.

THE JUPITER AGAIN.

Following on the successful completion of an officially controlled test with the Jupiter air-cooled radial engine fitted in the Bristol Bloodhound biplane, during which 225 hours 54 mins. flying (representing 25,074 miles flown) was carried out without a single adjustment or replacement being made, a further striking example of the reliability of the Jupiter engine has been furnished by the performance of a Jupiter installed in a Fokker F.VIIa and used by the K.L.M. on their Amsterdam—Paris service.

As is already known, the K.L.M. have decided to adopt the Jupiter-engined Fokker F.VIIa as the standard equipment for their air lines for the coming season. Immediately after the delivery of the first engine it was installed in the first F.VIIa, H-NACT, and this machine was placed on the regular commercial service between Paris and Amsterdam.

When it had completed 211 hours 14 mins. running, according to a report received by the Bristol Company from the K.L.M. Company, it was still running satisfactorily, but was then taken out of the machine for complete overhaul and examination. The report says :—

> The engine has given full satisfaction during the period of use and had no failure causing a forced landing of the machine. The fuel consumption per flying hour measured during the flight was about 95 litres per hour.
>
> A very careful examination of the engine after stripping it down showed that the wear on the principal parts such as cylinders, pistons, crankshaft, bearings, cam gear, etc, was practically nil. As a whole the results both in running and in overhaul after a prolonged period of use have been very satisfying and strengthened our opinion that we did well in standardising on the Jupiter engine for use in our commercial machines in the coming years

The following are the principal particulars of the Jupiter-F.VIIa :—

Empty weight, including instruments ...	1,710 kgs.
Pilot, petrol and oil	590 kgs.
Revenue-paying load	1,100 kgs.
Total weight, loaded	3,400 kgs.
Performance :	
Max. speed at 1,780 r.p.m.	195 km.p.h.
Cruising speed at 1,550 r.p.m.	166 km.p.h.
Climb with full load to 2,000 m. ...	18 mins.

THE U.S. ARMY AIR ATTACHE.

U.S. Army Air Orders report that Major Howard C. Davidson, Air Service, is relieved from assignment and duty as Assistant Military Attaché, London, and will proceed to Washington, for temporary duty in the office of Assistant Chief of Staff, upon completion of which he will proceed to Langley Field.

The same orders report that Major Clarence L. Tinker, A.S., Fort Leavenworth, will proceed to Washington, for temporary duty with the Assistant Chief of Staff, on completion of which he will proceed to London as Assistant Military Attaché.

[Everybody who has come in contact with him will regret deeply the departure of Major Davidson. There has never been any official person from the other side of the Atlantic who has been better liked and respected than he. His frankness of manner has won him friends wherever he has been, and his interest in everything aeronautical is so evidently personal as well as official that everybody has always been glad to meet him and discuss the affairs of our aviation with him. For, although his duty was to acquire information, his wide general knowledge of the subject and his sane outlook on it has always resulted in his giving really valuable advice in return for any information which he has acquired.

The position of any Service Attaché at any Embassy or Legation is always delicate. To put it baldly, he must be of necessity the chief spy for his Service in the country to which he is appointed. He is there to find out all he can about what that country is doing in the development of his particular Service. Major Davidson has done his work with consummate tact and has never ruffled the susceptibilities of even the most sensitive officials.

One of the most delightful stories about him illustrates his nice sense of humour. It concerns an official visit which he paid to a certain R.A.F. test station. The Officer Commanding the station at the time had had instructions that Major Davidson was to be shown everything except certain machines which were very much on the Secret List and were all housed in one shed. As they approached this shed the officer who was conducting the tour of the station said that it was not worth while going in there as there was only some old junk of no particular interest. The story goes that Major Davidson, in his quiet way, remarked, "Say, I wonder whether any of your old junk looks like this!" and produced from his pocket excellent photographs of all the hush-hush machines.

We shall miss his amiable presence at those official and semi-official functions where people are gathered together in the name of aviation. And everyone will wish him and his charming wife all good fortune in their return to their native country.—C. G. G.]

THE HELICOPTER COMPETITION.

The Air Ministry announces that the period in which flying machines entered for the Helicopter Competition were required to pass the prescribed tests ended on Apr. 30, and the competition is now closed.

Applications to enter machines were received from 34 competitors, but only one competitor actually sent a machine to Farnborough, where the tests were to be carried out. This machine did not, however, carry out any of the tests, and none of the prizes offered have been won.

It has been decided not to renew the competition.

AIR AFFAIRS IN PARLIAMENT.

IMPERIAL DEFENCE.

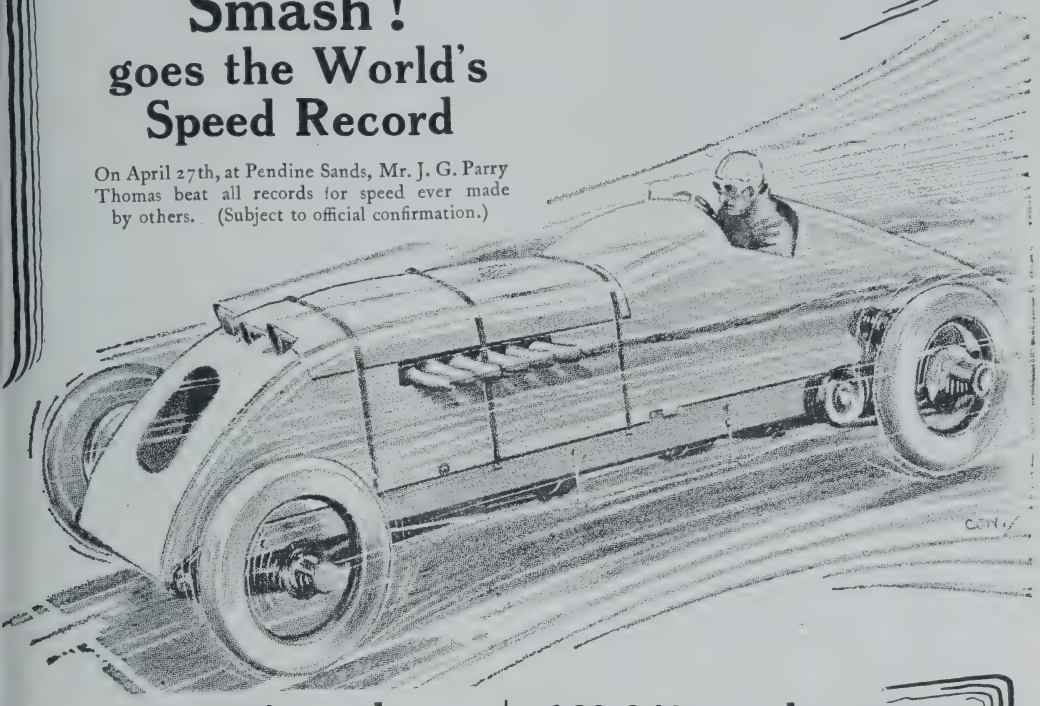
In the House of Commons on Apr. 22, in reply to questions by Lieut.-Cdr. Kenworthy, Cdr. Bellairs and Mr. R. Hudson, the Prime Minister said: "After careful consideration we have decided, as a special case, to lay the Report of Lord Weir's Committee on the Amalgamation of Services Common to the Navy, Army and Air Force. This Report, and the Reports of the Committee of Imperial Defence published in 1924 (Cmd. 2029), provide the basis of our existing system of co-ordination, and their Conclusions have not been impugned on matters of principle by any subsequent inquiry. We do not think it necessary, or in the public interest, to publish any other Report. The Minutes of Evidence of these Inquiries, each of which occupied many months, are very voluminous, and it would not be in the public interest to publish them, but the detailed Reports of a number of Sub-Committees will be published with the main Report of Lord Weir's Committee."

INSTRUCTION.

In the House of Commons on May 5, in reply to a question by Col. Day, the Secretary of State for Air said that the Regulations contained explicit instructions to the effect that before a pilot flew an unfamiliar type of aeroplane he must either be given dual instruction in its use before flying solo, or, if it was a type in which dual instruction could not be given, he must satisfy his Commanding Officer that he is accustomed to flying corresponding types and must also be given ground instruction by a responsible officer conversant with the type in regard to its characteristics in flight and the system of engine and petrol control which it embodies. Sir Samuel Hoare said that he was advised that a pilot of average experience should find little or no difficulty in changing from one type of aeroplane to another since the principles of flying and flying control were the same for all types of aeroplanes. This had been borne out by experience and he did not consider that further instructions on the subject were necessary.

Smash!
goes the World's Speed Record

On April 27th, at Pendine Sands, Mr. J. G. Parry Thomas beat all records for speed ever made by others. (Subject to official confirmation.)



168.074 m.p.h. on Shell Racing Spirit and Shell Motor Oil

160.349 m.p.h. on Shell Motor Oil and Shell Petrol

ordinary grades from public garages

Hitherto it has been assumed that racing cars had to have special oils and fuels to stand up under the terrific strain of miles-per-minute.

Mr. Thomas broke, however, all records ever made by others, when using *nothing but* the normal grades of Shell Motor Oil and Shell Petrol—exactly the same as offered everywhere to the public.

Petrol and lubricant were obtained in the open market from garages under the supervision of the R.A.C., whose official observer saw them poured into the car and sealed there.

Thus a precedent was smashed as well as a record.

The identical petrol and oil that Mr. Thomas used are available everywhere from the sealed Shell pump and the branded Shell Oil cabinet.

SHELL

Motor Oil and Petrol

STOP PRESS NEWS—(continued).

THE FLYING CLUBS.

The Newcastle-upon-Tyne Aero Club.

Report for the week ending May 2 :—

The weather was again very unfavourable, the whole countryside being enveloped in thick fog for three successive days. Sunday proved a welcome change, though there was a strong wind until about 5.0 p.m. when the wind dropped and fog rolled over again, though Major Packman gave half-an-hour instruction in landings to Mrs. Marcks.

The times flown were as follows :—LX 14 hrs. 30 mins., LY 2 hrs. 55 mins.; total 17 hrs. 25 mins.

The following members flew under instruction :—Miss Leathart, Mrs. Marcks, Mr. MacMillan, Mr. Miesegaes, Col. Sir Jos. Reed, Mr. L. Smith, Mr. C. Thompson, Mr. Ivan Sutherland, Mr. A. D. Bruce, Mr. Campbell, Mr. W. B. Harrison, Mr. W. Palmer, Mr. W. Todd, Mr. J. Bell.

Mr. R. N. Thompson flew with passengers on Saturday and Sunday. Mr. N. S. Todd took off with a passenger on Sunday evening in bright sunshine, but within 5 mins. a very heavy fog rolled over the aerodrome and he landed immediately, after only 5 mins.' flying.

The following flew as passengers with Major Packman, during the week :—Master Bell, Mr. Smith, Mr. and Mrs. Jack Hylton and Mr. Sampson.

The Club had the pleasure both on Friday and Saturday of visits from Mr. Jack Hylton and members of his orchestra. On Friday flying was impossible, but they were rewarded on their return visit on Saturday when Mr. and Mrs. Hylton and Mr. Sampson flew, Mrs. Hylton thoroughly enjoying a full series of stunts.

The Hampshire Aeroplane Club.

Mr. A. N. Clifton, B.Sc., Honorary Secretary of the Hampshire Aeroplane Club, sends the information that the Air Ministry has allotted the sixth subsidy for Light Aeroplane Clubs to the Hampshire Club. The Club is to be congratulated on having achieved this distinction.

Sir William Letts, K.B.E., has kindly consented to become a Vice-President of the Club.

On Friday, May 7, the weekly luncheon of the Southampton Rotary Club was addressed by the Chairman of the Hampshire Club, Mr. O. E. Simmonds, M.A., who spoke on the "Importance of the Light Aeroplane Clubs." Great interest was shown both in the details of the work being done by other Clubs and in the rapid developments that are taking place in the Hampshire Club itself. Mr. Simmonds emphasised the value of these Clubs not only in providing trained pilots but also in developing an air sense in our people. A vote of thanks to the speaker was proposed by that well-known Rotarian, Squadron-Commander Bird, late R.N., of the Supermarine Company.

An invitation has been received from the Portsmouth Rotary Club asking that Mr. Simmonds will address them on the subject of the Club's activities, and the date is now being arranged. The Committee is most encouraged by these proofs of interest, which are being received from all parts of the county.

The Committee feels that co-operation between the marine and aeronautical communities is of considerable importance and is pleased to note that a number of the Club's members either have marine experience, or are actively engaged at the Ports of Southampton and Portsmouth. It is evident that the seaplane side of the Club's activities is making a very wide appeal.

THE 1926 LIGHT AEROPLANE COMPETITION.

The regulations for the Competition for the two-seater light aeroplanes to be held this year for *The Daily Mail's* £5,000 prize, have now been issued in a complete form by the Royal Aero Club and can be obtained upon application to the Club by intending competitors and other interested parties. To a large extent these regulations have already been made public piecemeal by the Club and have been recorded in this paper. A summary of the present issue is therefore all that it is proposed to publish here.

The competition is open to two-seater aeroplanes, the engines of which, including carburettor and induction system, exhaust system, ignition equipment, airscrew hub and fastenings, radiator, pipes, and water (if any), do not weight more than 170 lbs. The aeroplane must possess complete dual controls, with an air-speed indicator visible in either seat. The heads of the crew must not be enclosed, and the seating and control must be capable of accommodating a normal person of 6 ft. height. The cockpits—if tandem—must be at least 24 in. wide at seat level, and if seats are side by side—at least 44 in. wide. If staggered seats are used each person must have at least 24 ins. of width at seat level. The top of the control column is to have a free range of motion of at least 15 inches fore and aft, and the two seats must not be more than 5 ft. apart.

The aeroplane, engine, and ignition equipment must be of British (Imperial) design and manufacture, and entrants and pilots must be British subjects.

The ingredients of the fuel used must be commercially obtainable in bulk, and the fuel throughout shall be substantially the same as, and within 5 per cent. of, the specific gravity of the fuel used in the type tests of the engine.

Fuel will be measured by weight, all refuelling in the competition is to be carried out at Lympne under the supervision of the official measurer. All fuel weighed into the tank from the beginning of the competition will count towards consumption, including that used for any testing or running up of the engine.

Excluding fuel and oil, a minimum load of 340 lbs. shall be carried throughout the competition by each aeroplane. This load includes the weight of pilot, and of the passenger if carried. If a passenger is not carried the balance of the 340 lbs. must be in the spare seat. Weight over and above the 340 lb. minimum may be carried anywhere in the machine and counted towards useful load—provided that the total weight of the machine does not exceed that covered by the Airworthiness certificate. Except in Eliminating test "B" the carrying of a passenger is optional.

Each aeroplane must possess a Certificate of Airworthiness which is to be produced to the Club one week before the opening date of the competition. Air Navigation Regulations must be complied with—subject to any concessions made by the Air Ministry. Government Registration marks are not necessary, but each machine must carry its allotted competition number on the lower surface of each main plane and on each side of the fuselage.

The competition will open at 8 a.m., and will close at 8 p.m., on each day, and competitors will not be observed or timed outside of those hours. The Stewards may prohibit flying in that period if they consider conditions justify such a step, and may extend the flying time to compensate for any loss due to such unfavourable conditions.

Pilots may be changed, subject to prior notice to permit adjustment of weights. The same engine and aeroplane must be used throughout, but repairs and replacements within the schedule are permitted. The schedule of replaceable parts is :—Engine : Petrol and oil filters, airscrews (of same design, construction and dimensions), spark plugs and ignition wires, valves and springs, ignition systems. Aeroplane : Wheels, tyres, tail skids, wing-tip skids. Other repairs and replacements of a minor nature may be made subject to prior consent of the Stewards. Discarding of any part, or alteration of the aeroplane, so that it differs from the machine as originally presented for the competition, will disqualify the machine.

The entrance fee is £10, closing date June 30, 1926. Late entries £30, closing date July 31.

Aeroplanes are to be presented fully erected at 10 a.m. on Friday, Sept. 10, when the eliminating tests open. These consist of :—

(A) Dismantling, housing, and re-erecting. The fully-erected machine is to be dismantled or folded, transported complete not more than 25 yards in one journey, placed in a shed 10 ft. wide by 10 ft. high, removed therefrom and re-erected, in not more than one hour, by not more than two persons, without using any tackle which is not carried on the aeroplane throughout the competition.

(B) Demonstration of dual control. Two separate flights, each of at least five minutes duration, including on each flight a figure of eight made within the boundary of the aerodrome. During these flights the pilot must be alone, and must alternately occupy each of the two seats.

(C) Getting-off. The machine is to take off, from rest, and flying straight pass over two barriers 25 ft. high and 25 yards apart, the first barrier being 300 yards from the starting point, in a wind of not more than 6 m.p.h.

(D) Pulling up. The machine must make a straight landing over a 6 ft. barrier, and pull up inside 125 yards in a wind not over 6 m.p.h.

The competition proper consists of flying over a series of courses, all of which must be completed at an average speed not less than 50 m.p.h. These courses will be :—Sunday, Sept. 12, Lympne to Brighton and back, covered three times (318 miles). Monday, Sept. 13, Lympne—Eastbourne—Lympne—Hastings—Lympne, covered three times (372 miles). Tuesday, Sept. 14, Lympne—Dover—Ramsgate—Margate—Herne Bay—Lympne, covered six times (372 miles). Wednesday, Sept 15, Lympne—Brighton and back, covered three times (318 miles). Thursday, Sept. 16, Lympne—Dover—Ramsgate—Margate—Herne Bay—Lympne, covered six times (372 miles). Friday, Sept. 17, Lympne—Croydon—Lympne, covered twice (212 miles). The total mileage is 1,964. Alightings are to be made at Lympne each time that aerodrome is reached. Each course is to be completed on the allotted day between the allotted hours, and any competitor failing to complete any course is disqualified.

[The Eastbourne Course will need a turning point inland as otherwise machines will fly several miles out to sea between Dungeness and Eastbourne. Not only will this be dangerous but good propaganda will be lost.—G. D.]

The first prize (£3,000) will be awarded to the competitor who carries the greatest useful load per unit of fuel consumed. The second prize (£1,500) and the third prize (£500) will be awarded to the machines placed second and third.

At the end of the competition a handicap race for a prize of 200 guineas, presented by the Society of Motor Manufacturers and Traders, will be held over a course of approximately 100 miles. This race will be open to any aeroplane taking part in the main competition which has completed at least one-half of the complete course.


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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 26; Tuesday, 24; Wednesday, 32; Thursday, 22; Friday, 22; Saturday, 30; Sunday, 9.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 68, passengers 397, freight 30 tons.

AIR UNION:
Paris—London: Machines 64, passengers 195, freight 15½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 14, passengers 35, freight 5 tons.

SABENA:
Brussels—London: Machines 12, passengers 42.

DEUTSCHE LUFTHANSA A.G.:
Berlin—London: Machines 3, passengers 8.

SPECIAL:
De Havilland Aircraft Co. Ltd.: 3 machines with freight between Paris—London.
Mr. Dudley Travers: 1 D.H.9 from Como.

Total number of trips by British Machines, 72, carrying 397 passengers. Foreign Machines, 93, carrying 280 passengers.

Comparative Figures:

NOTE.—677 passengers and 50½ tons of freight were carried last week in 165 machines.

Week ending May 16:
Machines, 165; Passengers, 677; Crews, 221; Total personnel, 898.
Corresponding week, 1925:
Machines, 154; Passengers, 538; Crews, 191; Total personnel, 729.
Corresponding week, 1924:
Machines, 81; Passengers, 271; Crews, 130; Total personnel, 401.
Corresponding week, 1923:
Machines, 105; Passengers, 353; Crews, 175; Total personnel, 528.
Corresponding week, 1922:
Machines, 162; Passengers, 337; Crews, 195; Total personnel, 532.
Corresponding week, 1921:
Machines, 89; Passengers, 350; Crews, 106; Total personnel, 456.
Corresponding week, 1920:
Machines, 91; Passengers, 138; Crews, 98; Total personnel, 236.

Croydon Notes.

A.D.C. Aircraft have installed a Nimbus engine in a Martinsyde F.4, and it was flying last week. A very neat cowling and a new type rudder have been designed by Mr. Kenworthy. Although no figures are yet available the machine shows very great promise. It has been given the type name of Boreas.

From May 15 Imperial Airways are running a special shopping machine to Paris for the benefit of women. It will leave Croydon at 07.55 hrs. and return to Croydon at 19.30 hrs. leaving the whole day clear in Paris. One is inclined to think that not many women will avail themselves of the opportunity unless it becomes fashionable to go on to Croydon after leaving the last night club of the evening,—sleeping in the car and in the machine. Passengers would then return to London in time for a *diner dansant* and perhaps the *thé dansant* could be arranged in the "giant air liner" on the homeward journey. In that way nothing would be missed though everything (one imagines) would be mist.—G. D.

Lightning and Wireless.

The following letter referring to the recent incident on the London-Paris Route is of distinct interest.

Sir,—I have previously communicated with you on the subject of Aircraft and Radio Telephony and your note in the current issue concerning the electrocution of Emma Robert [The W.10 G-EBMR] last Friday once again moves me to argument.

It seems to me, who am but a dweller on the fringes of electrostatics, that the static charge which could accumulate on the mass of even a W.10 would be so small as to be negligible when one considers that the machine is merely one plate of a condenser separated from its plate of opposite sign, the earth, by 2,000 feet of excellent di-electric. Still even granting that the machine could carry a sufficient charge to cause a dangerous spark on alighting, could not Mr. Barnard have let this get away safely by allowing his aerial to trail in the water of the Channel?

I confess I do not see that the danger would have been greater had the aerial been unwound. The object of that flash of lightning was to find a comfortable home at earth potential where it could curl up and go to sleep. There was not room in the electrical capacity of the machine and the fact that it scorched it in passing is quite irrelevant. The lightning had no interest in Emma Robert, but Emma Robert happened to be in the way at the time. Even if the aerial had been out it would have been a blind alley and not even a *pis aller* from the lightning's point of view (since it led to no place of low potential).

I know you can quote the case of the fatal lightning flash which killed a Service operator last year, but in that case the set happened to be defective also and it is much more likely that the man was killed by a fat high tension current from the generator of his own transmitter.

Anyway, your remarks are not so futile as the interpolation by the Editor that the discharge "might merely have blown up the wireless gadgets" These are the airy sort of uninformed generalisations which get a man into trouble. But he loathes wireless, of course.

Forgive me imposing this product of the midnight gas on your harmless—generally harmless—self. I feel in a thoroughly Donnybrook mood and your head happened to be the one I saw!

(Signed) DAVID H. M. SYMON.

The State of Emergency.

The Times of May 4 states:—

Full advantage will be taken by the Government of the fast transport facilities afforded by aeroplanes, and the Royal Air Force in a state of national emergency will assist materially in carrying urgent Government mails if the usual methods break down. At the moment it is not proposed to use Service aircraft for more than urgent communications, but it must not be forgotten that the large night bombing machines can carry heavy loads for long distances.

On the civil aviation side the Continental services of Imperial Airways will, it is anticipated, not be affected, as few, if any, of the staff come under the orders of the General Council of the T.U. The normal services will be run, and will be strengthened if the number of passengers justify such a step, while if there is a heavy demand for accommodation the full services, which were not to have come into operation until next week, will be instituted at once. Twelve machines are available for service, and there are four single-engined D.H.34 aircraft now in reserve which could be made available in an emergency either for Government use or for public transport.

In addition there are several taxi hire and "joy riding" firms with aircraft carrying small loads, and other machines are available at the civilian flying schools. Even the aeroplanes of the flying clubs, though not regarded as full-sized aircraft, can carry loads of some 200 lbs. or more.

An Aerial Time-Table.

Lep Transport and Depository Ltd., who were one of the first international traffic offices to take an active interest in aviation, have just issued a time-table of all the air services in Europe. In issuing it the firm says that an authentic time-table to cover all the air services in Europe was very badly needed, both for the benefit of the agent's booking clerk and also for commercial men and tourists. They have endeavoured to supply that want and the result is certainly interesting.

Knowing something of international air lines, one has not great faith in any aerial time-table. Time may be money, but on some air lines its value seems to have depreciated worse than that of the franc, and on others it seems to have reached about the level of the Imperial Russian rouble.

Nevertheless, most air lines endeavour to start their machines at the advertised times. Consequently, a time-table is useful because it does, at any rate, give one approximately the hour at which one may get away by air from a town which one wishes to quit, though the time of arrival at the desired destination indicates rather a pious hope than a serious resolution.

Nevertheless, these time-tables, which are issued at the price of 6d. by Lep Transport and Depository Ltd., Sunlight Wharf, 37, Upper Thames Street, London, E.C.4, are worth acquiring, if only because, in years to come when air lines acquire punctuality and their time-tables acquire real value they will be historical relics as interesting as are elementary Bradshaws.—C. G. G.

Atta Beedlekom.

The following appeared in *The Times* of Apr. 29.

Mr. C. H. Biddlecombe, one of the officers attached to the Department Director of Transport at the Air Ministry, has accepted an appointment in America as the operations manager of a commercial transport company.

Everyone will congratulate Mr. Biddlecombe on his appointment. He has been responsible for the lighting scheme on the Paris air route. Possibly those officials whom he used to keep from their beds of a night while he was night flying will not miss him much, but there are others who will.

Sir Samuel Hoare and the Pterodactyl

On Friday, Apr. 23, Sir Samuel Hoare, the Secretary of State for Air, paid a visit to the R.A.E., Farnborough, and witnessed a demonstration by Capt. G. T. R. Hill of his tailless aeroplane. The Pterodactyl made a number of very satisfactory flights on this occasion.

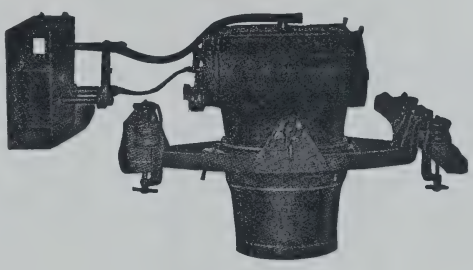
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A CIVIL AVIATION ACCIDENT.

On May 2 Mr. A. Orde Bigg-Wither, late Flying Officer, R.A.F., flying a joy-ride machine for Mr. George Mark Lloyd of Baker Street, was killed in an accident at King's Lynn. Mr. Lloyd was seriously injured. A passenger named Arthur Barrett, of King's Lynn, jumped out of the machine just before it hit the ground and escaped with injuries to his face.

Newspaper accounts say that Mr. Lloyd had just finished the exhibition feat of walking along the wings of the machine when apparently the engine stopped. One imagines from the accounts that the machine stalled and spun from about 200 feet. In coming down it struck a large tree and crashed in a cemetery.

This is the first fatality in Civil Aviation in this country since the crash at Croydon on Christmas Eve, 1924, and it is the first joy-ride fatality since a machine dived into the sea near Swansea in October, 1922, and drowned three people.

MADRID—MANILA.

On Apr. 27, Capt. Gallarza, who, with Capt. Loriga, is attempting to fly from Madrid to the Philippine Islands on two Breguet XIX biplanes, arrived at Hanoi (Tongking) from Bien-Hoa (15 miles from Saigoir, Indo-China). Capt. Loriga ran short of petrol and was forced to land at Hue, Annam.

On Apr. 28 Capt. Loriga flew on to Hanoi.

On May 1 both pilots left Hanoi, Capt. Gallarza arriving at Macao, at the mouth of the Canton River, the same day, but on landing he damaged one of his wings. No news of Capt. Loriga was available at the time of going to press.

COPENHAGEN—TOKYO.

On Apr. 29 Lieut. Botved, of the Danish Army, who is attempting to fly from Copenhagen to Tokyo on a Fokker C.V. biplane, left Shanghai at 07.40 hours for Peking. He was forced to land at a village 10 miles N.E. of Yuchang owing to engine trouble.

Later information states that the engine seized up solid and that a new engine had been wired for from Yokohama so that the journey to Tokyo may be completed.

The aeroplane will be transported to Peking to await the arrival of the engine.

PERSONAL NOTICES.

DEATHS.

McGRANE.—On May 3, at Lyndhurst, in a motor accident, Hugh McGrane, Flg. Off., R.A.F.

Mr. McGrane, whose age is given as 46, was killed on May 3 in an accident to an R.A.F. motor-lorry at Lyndhurst, in the New Forest. The driver of the lorry, seeing the rear light of a stationary lorry in front of him, tried to stop, but the front part of the lorry struck the back of the vehicle in front. Mr. McGrane was thrown forward and killed instantly.

Mr. McGrane was an Airship Officer at Howden in 1920. In April, 1921, he was posted to No. 238 Sqdn. Cadre, at Cattewater, and since April, 1922, he has been serving at Calshot.

PORTAL.—On Apr. 30, killed while flying at Donibristle, Fife, Nigel Hugh Portal, Lt., R.N., youngest son of Edward Robert Portal, of Eddington House, Hungerford.

Mr. Portal was detached from the Navy for service with the R.A.F. on Nov. 16, 1925, and underwent a course of instruction at the R.A.F. Training Base, Leuchars.

Mr. Portal was the youngest brother of Wing Cdr. C. F. A. Portal, D.S.O., M.C., R.A.F.

MARRIAGES.

GILLEY—STOCKEN.—On Apr. 27, at All Souls, Langham Place, Flt. Lt. Denys Gilley, D.F.C., R.A.F., second son of Mr. and Mrs. J. B. Gilley, of Torquay, to Kathleen Beynon Stocken, only daughter of Mr. and Mrs. Charles B. Stocken, of 75, North Gate, Regent's Park, N.W.

O'MALLEY—FAULKS.—On Apr. 26, at Holy Trinity Church, Brompton, Charles James Sidney O'Malley, R.A.F. Medical Service, to Marjorie Althea, only daughter of Mr. and Mrs. W. J. Faulks, of Newmount, Windsor Terrace, Hampstead.

FORTHCOMING MARRIAGES.

BOLDERO—READ.—The engagement is announced between Mr. C. H. W. Boldero, R.A.F., younger son of the Rev. J. H. and Mrs. Boldero, of Morton Vicarage, Bourne, Lincolnshire, and Brenda, only daughter of Mr. Alfred Carter Read and the late Mrs. Carter Read, formerly of Japan.

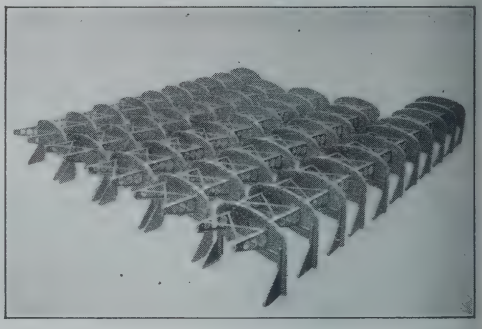
BIRTHS.

MACPHERSON.—On St. George's Day, at "Heatherbank," Grovehill Road, Redhill, to Joan, wife of Sq. Ldr. C. E. H. C. Macpherson, R.A.F.—a son (Peter George Gordon).

SCHOFIELD.—On Apr. 25, at "Woodthorpe," Purley, to Margery, wife of Flg. Off. H. M. Schofield, R.A.F.—a daughter.

WELSH.—On Apr. 28, at 142, North Audley Street, W.1, to Ruth ("D.L."), wife of Wing Cdr. Welsh, R.A.F.—a son.

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXX. No. 21. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

"I AM THE HEREWARD." (KINGSLEY—"*Hereward the Wake.*")



A GUARDIAN OF THE ARMY:—A Bristol Fighter of No. 2 (Army Co-operation) Squadron, R.A.F. No. 2 Squadron has adopted as its motto the word "Hereward," which, as Charles Kingsley explains, means "Guardian of the Army." The Saxon word "Here" is the same as the modern German "Heer," and "Guardian" is the same as "Warden." No. 2 Squadron was originally formed in May, 1912, and was one of the first four Squadrons to fly to France in 1914. It was disbanded on January 20, 1920, and re-formed on February 1, 1920.

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THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 21.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE MIDDLE-CLASS VICTORY.

For a hundred years at least, and perhaps for a hundred ars before that, sociologists and philosophers and other eorists have been telling us that the Middle Classes would timately be crushed out of existence between the upper d nether millstones of Capital and Labour. They inted discouragingly to the rise and fall of the Roman npire as related by the World's prize humorist, the late r. Gibbon, and showed us how the honest hardworking ebeian, or commoner, was squeezed between the awful ulence of the patricians and the hardly-won existence of e slave classes. And they drew entirely erroneous infer-ces through neglecting to make due allowance for racial ialities and circumstances.

The Great Strike, which came officially to an end on May , though normal work did not begin till May 17, has shown that the people who really control this country are the nglish Middle Classes. One uses the word English ad-sedly, for the fight was won by the English themselves. was a victory for English phlegm and humour.

There was no Welsh Wizard to arrogate to himself the edit of the victory, there was no hard-headed Scot or flam-yant Irishman to be held up as the nation's leader in the ne of crisis. The fight was won by the good solid thick-aded rather stupid English themselves; the people who ver realise that there is a crisis till the crisis has ceased be, and who muddle through in a cheerful sporting spirit ll they realise with mild surprise, and without any self-mplacency, that they have done something great.

The Greater War.

Some day History will recognise the fact that the Great trike of May, 1926, was actually rather more important than e so-called Great War of 1914-18. If we had lost the War 14-18 and the Germans had won, Europe might have been nder the iron heel of German Militarism, but there would any rate have been law, order and discipline throughout urope. If we had lost our own private war of May, 1926, nd, if England had fallen into the hands of the Communists ho were behind the Strike, not only would England have en given over to anarchy, but world-wide commercial chaos ould have followed.

For other nations in Europe would have followed suit, nd, though neither England nor the Western European ations would have indulged in an orgy of slaughter as did ie barbarians of Russia, there would at any rate have been ich chaos that financial ruin would have fallen upon the vilised World. And even the Monroe Doctrine would not ave kept America from sharing in the ruin.

As a matter of fact the issue was never really in doubt. he English Middle Classes were just as sure that they would in against Communism as they were that they would win against Germany. As one intellectual Englishman remarked, "Guillotines and pogroms are not the favourite excitement of the British People."

The Gift of Humour.

The way in which the English Middle Class regarded the whole affair was summed up with unconscious aptitude by an official of Imperial Airways Ltd. One remarked to him, after the show was over, that one hoped the police would catch the people who lifted the rail on the main line North of Newcastle and killed three people by upsetting a train, and said that the criminals would swing for it if caught. He replied quite seriously, "Yes, that *was* carrying the joke too far."

There you have the basic feeling of those who won the War. Bashing people on the head with truncheons, driving lorries through hostile mobs of strikers, running the gauntlet of stone throwers on motor-'buses, flying over-loaded aeroplanes through rain and fog, doing a full day's work to keep a business going and then driving all night with newspapers or milk vans or going on duty as a special constable, was all part of the joke to the Middle Class Englishman. Nothing short of deliberate murder without a chance of a sporting fight could make him think that the joke had gone too far.

Which is precisely why we won the War of 1926 as well as the War of 1914-18. The essential Anglo-Saxon, with his admixture of Norman aristocracy, has altered not at all since English archers broke the French chivalry at Cressy or Agincourt, and English pike-men beat-up the fleeing enemy.

One does not believe that the English Middle Class ever stopped laughing right through the strike, except in the actual heat of action or when actually knocked out by fatigue. And that was just where the Communists, mostly Russians and assorted Dagoes, failed. They took themselves with deadly seriousness. And it is perfectly impossible for people who take themselves seriously to come out on top against an enemy who merely grins and bangs them joyfully on the head.

The British Workman.

In fairness to the honest God-fearing British Workman it must be said that the vast majority of him had no desire whatever to go on strike. Being made, after all, of the same stuff racially as the Middle Classes, he had no desire for Communism or Red Revolution. After all these years of bad trade, he only wanted to be let alone to get along with his job and to be reasonably well paid for it.

The workman may not be a political economist, but he knows enough, by bitter experience, about the law of supply and demand, to realise that if any particular trade does not pay on its merits, it had better be left to shift for itself, till somebody makes it pay or till it goes out of business.



STRIKE BREAKING.—A De Havilland Moth (Cirrus engine) at the Yeovil Aerodrome of the Westland Works. On the left is Mr. J. C. Joynt, who organised the flying operations, and in the middle, without hat, is Mr. Gibson, the Westland Works manager.

And the railway men and the transport workers and the printers and the rest, except for a few half-educated people with half-baked intellects, had no high-faluting theories about going out on strike in support of the coal miners.

But, being loyal to their leaders, as all Englishmen are till the leaders have proved themselves hopelessly incompetent, or dishonest, the workmen went out on strike because they were told to go. And now they know to their cost that the Middle Classes, the despised *bourgeoisie* at whom the Russian friends of their self-appointed leaders have jeered for so many years, can not only get along very well without them, but can, with a very little training, do their jobs better than they can themselves.

In fact one industrial employer is said to have remarked, when he saw how things were going, that he believed it would pay to run a factory manned from top to bottom by decently educated middle class men drawing high pay for high-speed work. And here he would probably be right if he were willing to pay enough.

Our Leader.

One has said hereinbefore that the fight was won by the English. This point is emphasised by the fact that the head of the Government, Mr. Baldwin, is essentially English of the English, and middle class of the Middle Class.

He did not act the inspired leader. He just sat down to his job and did it in the light of his loyalty to his King. He made no impassioned speeches or appeals. He just talked plain sound commonsense which went home by newspaper and wireless equally to the workless workers and to the hardworking middle classes.

There is nothing particularly inspiring about Mr. Baldwin. He has not the personality of a Gladstone or a Disraeli or a Salisbury. Still less, thank Heaven, has he the self-satisfied theatricalism of Mr. Lloyd George, who, by his essay into Liberal and American journalism during the strike, has shown himself to be the wind-bag full of poison-gas which one has always known him to be—as readers of this paper will remember.

But Mr. Baldwin is a man whom one feels instinctively is to be trusted. And intellectually he is a much bigger man than most of the people in this country know.

Those who have had the good fortune to read Mr. Baldwin's address to the Classical Society, on being elected President of that association, have a better insight into his character than have those who merely read his political speeches. One commends the little pamphlet in which that speech is published to everybody who wishes to understand properly the character of our Prime Minister.

They will find there, not a politician nor even that unusual person an honest politician. Nor will they find the funny little man with the pipe, beloved of the cartoonists. But they will find there a very fine specimen of the English gentleman, a man of humour and education, a man brought up in the humanities, and one very well fitted to guide this nation on its proper path, as he has done in this time of crisis.

England for the English.

In such a crisis we needed nobody theatrical. And there there was nothing theatrical about the way in which the English Middle Class won its victory. Many months ago, when some curiously misguided individuals attempted to establish in this England of ours the methods of the Italian Fascisti, one said emphatically that we cared for none of these things. And in the crisis the British Fascisti turned out to be precisely the complete washout which one had expected.

It is true that individual members of the Fascisti may ha done good work when absorbed into the official organisation But as an operative organisation the Fascisti were so feeb as to be hardly even funny. At one of their local hea quarters early in the strike a gang of them came out, cor plete with black shirts and looking theatrically warlike, ar they were promptly chased back again by a jeering crow consisting much more of mere spectators than of actu strikers.

Which reminds one of a bright remark made by a brilliar if somewhat erratic writer in that highly entertaining Oxfo magazine, *The Cherwell*. One forgets his exact words, but t sentiment was that the time had now come when we Englis would do well to return for a short period to the joyo mental outlook of our forefathers to whom every foreign of every kind was merely a Dago.

The fact is that we English are a thing apart, undoubted the Chosen People of the Lord, and we have no use for eith Fascism or Bolshevism. The essential Englishman, plus h inevitable Non-Conformist Conscience, even when he prid himself that he has no conscience, is good enough for th country.

Our Non-Conformist Conscience.

Nothing illustrates our Non-Conformist conscience beautifully as does the enrolment by the Government of t "shock troops" of the Special Constabulary. One believe that they were called the Special Constabulary Reserve. Bu instead of being a kind of second or third line, as are mo reserves, they were in fact a terrific fighting force held leash for an emergency.

There were several thousands of them, and their qualifica tion was that either they were men with war service or els they were public school or University men with experience the senior Officers' Training Corps. They were equippe with steel helmets, commonly called battle-bowlers, and wer armed with truncheons. But privately they carried knuckl dusters, jemmies, lead pipes covered in rubber tubes, or an other weapon they liked—short of guns and knives.

Their fighting weight, man for man, was about equal t that of the Guards. They were housed in barracks and string of motor 'buses was held in readiness to throw ther into action wherever there might be serious trouble. Un happily, from their point of view, they were never used except in very small contingents. And they went home, a the end of the strike, about the most disappointed men i England—with perhaps the exception of the Communis leaders.

Of those who were used one story is that the Authoritie wanted to get some tents from a firm somewhere in th direction of the Old Kent Road, and the lorries sent to co lect the tents were held up by strikers. Thereupon a coupl of 'bus-loads of the Reserve, about sixty or seventy in all were rushed to the spot. Within five minutes of their de bussing there were 150 casualties among the strikers. An the loading of the tents thereafter proceeded in perfect peace

Now the Government of any other country would have use a military force in such an affair. And the row would hav assumed the importance of Civil War. But, thanks to ou national conscience, if we had been compelled to use thes "shock troops" in masses we should still have been able t claim that law and order had been maintained by the Civi Power.

The Great Convoy.

The only time the Government did use troops in an strength was when they were employed as escorts, for then if there had been trouble, the troops would have been th



LOYALTY.—The Personnel of the Fairey Aviation Co. Ltd. going to work during the Strike. One lorry and its trailer carried 130 people per trip. The majority of the hands went to work regularly throughout the strike.

H.R.H. The Prince of Wales

flies from

Paris to London

in an Imperial Airways aeroplane fitted with Napier engines

"NO better demonstration of the usefulness of aircraft in an emergency can be imagined than the return of the Prince of Wales to England by air on May 4th.

It is worth while recording for historical purposes that Mr. O. P. Jones had the honour of piloting the Prince of Wales and that the machine was a Handley-Page W.10 with two Napier 'Lion' engines."

Aeroplane
4th May 1926

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attacked and not the attackers. The greatest occasion was when, as a direct challenge to the strikers, that immense food convoy was brought up from the Docks to Hyde Park, straight through the heart of Bolshie-Land.

If the mob had had either the pluck or the foolishness to have attacked that convoy there would have been wholesale slaughter. What with infantry guarding the lorries, and armoured cars interspersed at frequent intervals among the lorries, and batches of police at every street corner, and platoons of infantry at the main crossroads, if the mob had moved in a hostile manner it would simply have been mown down like ripe corn.

As a matter of fact the vast majority of the crowds were interested spectators who were filled with admiration at the way in which the whole thing was done. There was hardly even a murmur when the convoy went through the crowds of strikers at the dock gates and as soon as ever it got within the semi-respectable parts of East London there were cheers.

THE OPPOSITION ERROR.

The way all the Government Departments handled the whole business was admirable. Mr. Ramsay MacDonald, the Opposition Leader, in a singularly silly speech for so clever a man, delivered a day or two after the strike was crushed, said that when the strike was over Mr. Baldwin made overtures to the miners which, if he had made them two days before the strike began, would have prevented the strike.

There you have the best possible evidence of the intelligence with which Mr. Baldwin and his Government handled the whole affair. Everybody knew that the Communist leaders were preparing for what they hoped would be a revolution, and everybody knew that the sensible and respectable Trades Union leaders were out-voted by the followers of the Communistic leaders.

Therefore, if Mr. Baldwin had put forward to the miners those propositions which would have prevented the strike he would merely have been bottling up the trouble for a later date. Being a man of intellect, and having a certain number of men of intellect in his Cabinet, he knew perfectly well that the great opportunity had arrived for bringing the revolutionary movement to a head.

He saw that the moment had come to stand firm and to refuse to give way to the threat of a general strike. The result has fully justified his strategy. And now, having beaten the Communists, he is able to treat with the colliers and the coal operators free from any outside interference or threat. His was one of the most statesmanlike actions, or inactions, in the history of this country.

Next to Mr. Baldwin the Government success is largely due to that eminent lawyer, Sir John Simon, well-known during 1918 to the Royal Air Force. His legal dictum that the strike was not a trade dispute within the meaning of the Act, because with the exception of the colliers the Unions on strike had no dispute with their own employers, and that by calling the Unions out on strike without proper notice the Unions themselves had automatically cancelled all the statutory rights of the Trades Unions, and had made illegal the payment of strike-pay and had dissolved all liabilities of employers, simply broke the hearts of the law-abiding Trades Union leaders.

That plain demonstration of the entire illegality of the strike, and the firm front shown by the hitherto despised Middle Classes actually broke the strike before the end of the first week. After that the only question was how long the Trades Union leaders would take to admit that they were beaten.

The strike has been the best thing that has happened to this country for many years, probably for more than a century. It has shown definitely who are the real masters of the country. The masters are the real workers, the men who organise and run the commerce of the nation and have shown that they can use their hands as well as their heads.

One includes particularly among these workers the Staffs at the War Office and the Home Office through whose foresight the whole scheme of organisation was worked out years ago, the work having been begun immediately after the Triple Alliance strike in 1921. All that the Middle Class had to do was to put itself at the disposal of the Government and fit itself in with the organisation which had already been laid down.

The mobilisation was as perfect as was the mobilisation of the British Expeditionary Force when it went to war in 1914. And that is recognised by the military authorities of the World as the most wonderful piece of organisation in military history. In the same way the organisation and the operation of the English Middle Classes in 1926 will go down in history as the greatest civil victory that the World has seen.

We can all feel justifiably proud of ourselves. And now we can get down to our jobs of increasing the commercial prosperity and the general well being of our peculiar country.—

C. G. G.

AIRCRAFT DURING THE STRIKE.

R.A.F. Newspaper Work.

Though official information concerning the amount of the flying and the purposes of the flying done by the R.A.F. during the strike has been definitely refused by the Air Ministry, despite the value the publication of such news might have in raising the esteem in which the R.A.F. is held by the people, it is known that R.A.F. machines were used very largely for the transport of the official *British Gazette* to the more distant parts of England, and even to Scotland.

One hears that Vickers Virginias from No. 9 Bombing Squadron at Manston were used, operating from Biggin Hill, to fly *British Gazettes* to Sealand, for distribution in the Liverpool and Birkenhead areas and in West Lancashire and Cheshire.

Virginias and Victorias of 58 Squadron were also employed on carrier work, operating one believes from Northolt and carrying *Gazettes* to Catterick and Edinburgh. These Virginias habitually flew at night arriving at their destinations just about dawn.

Supermarine Southamptons from the R.A.F. Base at Calshot carried *Gazettes* to Plymouth. But as the car convoys from London always arrived long after daybreak their work was all done in daylight.

Various other machines of the R.A.F. were used for carrying Government dispatches.

All told the R.A.F. flew some 80,000 miles during the strike, with only two crashes, in one of which a pilot was injured. Approximately 45 tons of mails and newspapers were carried, as well as a certain number of passengers.

Despite rumours which were set about by disaffected persons, and despite unintentional misrepresentations, as when for example a strike of civilian workmen at the Royal Aircraft Establishment was reported as a strike of R.A.F. Aircraftsmen, there has not been the slightest indication of disaffection, let alone Bolshevism, among the personnel of the R.A.F.

R.A.F. mechanical transport was used in certain instances to accelerate the transport of troops in certain areas and whether employed in this work or on aircraft work the airmen of the R.A.F. worked with the best of good will and each did his best towards putting an end to the state of emergency.

Civilian Air Transport.

For the first time in its history Civil Aviation has justified its existence in a national crisis. During the Great Strike of May 4-12, 1926, aeroplanes of the R.A.F. employed on civilian duty, and civil aircraft of all sorts and sizes, were pressed into service to convey passengers and goods who or which could not otherwise have reached their destination in the required time. Quite a large number of people chartered aeroplanes for special flights, and, as already shown in the emergency issues of THE AEROPLANE, a vastly increased number of passengers used the cross-Channel services. But the best work was done in conveying newspapers.

An important part of the programme of the would-be revolutionaries was to cut off all newspapers so that the loyal people of the country might be left in ignorance of the means which were being taken to protect civilisation, while falsified news of revolutionary successes were spread by such means as were available. In this way the revolutionaries hoped to produce something like a state of mental as well as commercial chaos in the country.

The fact that the British Broadcasting Company was well protected and so was able to transmit accurate statements concerning the maintenance of supplies, and concerning the Government's maintenance of authority, naturally countered quite successfully the efforts of the revolutionaries. But the people of this country have become accustomed to set more store by the printed word than by what they may hear orally. Consequently the maintenance of newspaper supplies was very nearly as vital as the maintenance of food supplies.

The newspapers which did most to disseminate encouraging news to the loyalist community were, primarily, *The British Gazette*, printed in *The Morning Post* office under the direction of the Government; *The Continental Daily Mail* printed in Paris and brought to Lympne by the French Air Union; the emergency issue of *The Daily Mail*, printed in Plymouth; and *The Newcastle Chronicle*, printed in Newcastle. *The Times* also did good work when it organised its emergency issues.

The Continental Daily Mail was conveyed from Lympne to the more distant parts of England by aeroplane and to the nearer parts by car. The Plymouth edition of *The Daily Mail* was brought to Yeovil by car and thence distributed by aeroplane and car. *The Newcastle Chronicle* was brough


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down South by aeroplane and thence distributed. *The British Gazette* was distributed from London by car and by aeroplane.

Hereafter there follow various notes collected from various sources concerning the actual activities of the aeroplanes used in this distributing work and also some brief accounts of the work done by aeronautical people in the course of the strike. Though these notes do not profess to give any thing like a complete account of what the Aeronautical Community did to help in preserving decency of existence in this country, one hopes they will at any rate be of some historical value as recording the quality if not the quantity of work done.

In no sense can the work of the aircraft be called Commercial Aviation. Nothing was commercial during the strike. Everything was done at no cost but at vast expense, if one may coin what is apparently an Irish bull. What one means is that most of the labour was voluntary but the cost in petrol and wear and tear of engines and aircraft and cars and so forth was enormous in proportion to the total number of newspapers carried.

But measured in terms of the value to the moral of the nation of the news disseminated by these newspapers, the job was very cheap at the price. And so Civil Aviation, although it may not have been commercial, thoroughly justified itself.—C. G. G.

The R.A.F. Club and the Strike.

Bombast and trumpet-blowing are not needed in the Royal Air Force. It is, however, in no bombastic spirit nor in any brass-band attitude that the writer has set down the part played by the R.A.F. and its Reserve in that confined area which must needs be the field of vision of an observer.

THE AEROPLANE has a large circulation and those of its Service readers who are either abroad or were confined to camp for emergency purposes may gather in some measure what their fellow-Rafites did in order to end "The Great Lunacy." May pardon be granted for the inclusion of personal experiences.

The first day of the upheaval witnessed the R.A.F. Club turned into a sort of recruiting depot. Notices freely displayed offered one a choice of temporary careers not usually open to or recommended to members of West End clubs.

The response, so the Secretary has told one, was excellent. The Central London Railway during the first two days of the upheaval was practically manned and staffed by the Club and members of the R.A.F. Reserve. The writer was posted to the Central London from the Underground headquarters in Westminster and received a liberal education in a new language which consisted of such phrases as "building up," "isolating cock," "getting tripped," "auxiliary control lever," and so on, before being attached for duty to the Bakerloo.

The hours were long for voluntary tube-workers, some doing as much as twelve to thirteen hours a day, with only half-an-hour off for lunch. Nearly everyone who joined the Underground wished to become a motorman, but if ignorance had been an absent quantity, the demand would have been for the gateman's platform. The amateur gateman had all the fun.

Here is an incident. An old gentleman stepping on the gateman's platform somewhere on the Bakerloo, hovered between the two coaches in an undecided manner. At length in a tone of great meekness he said to the volunteer gateman, "Can you tell me, young fellow, in which of these compartments I am allowed to smoke an Abdulla?"

Two other stories concerning the Central London Railway are worth recounting. Probably through usage they have become somewhat distorted, but both have the elements of their origin in truth. The first concerns the luckless driver of a train which had broken down in the tunnel. In the tunnel are telephone wires to which an instrument can be attached for summoning aid. The driver having walked a short distance in front of his train with his 'phone gear was horrified, on looking round, to see his train chasing him along the tunnel. He had, in error, left the brake off, and a slope did the rest. There was only one thing to do and that was to run faster than the train. This he did, arriving at the next station platform hotly pursued, but victorious, and if not with the plaudits of the populace, then certainly with a deep sense of relief.

The second story concerns an adventurous soul, also a driver on the C.L.R., who, being stopped by a danger signal and waiting some considerable time for the clear line green to appear, left his train and walked to the next station to find out the cause of the delay. Arrived at the station, he found no "man under authority" and so proceeded out into God's fresh air and then to his club to have afternoon tea. One can find nobody who knows the sequel of this story. What happened to the train? Whether it is still in the tunnel between Marble Arch and Oxford Circus, no one knows. Perhaps being stationary for so long it got lonely and died!

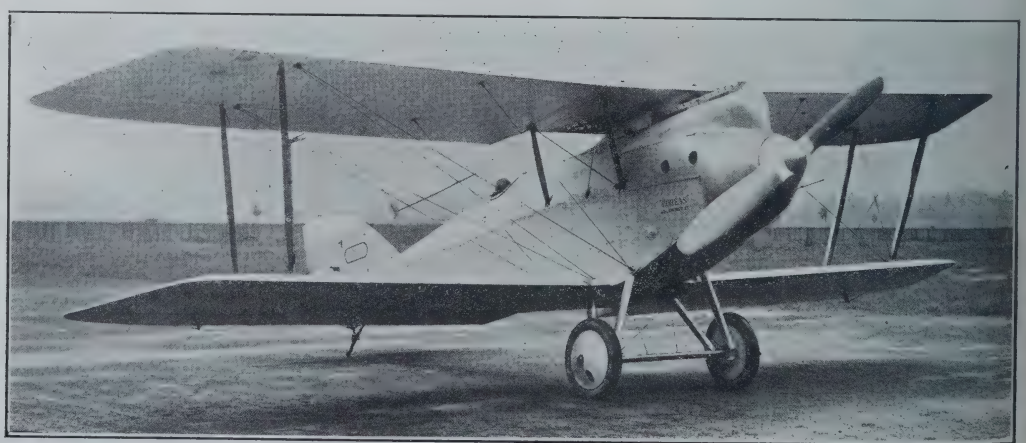
One found after two days on the Underground that bad headaches ensued as a result of being in semi-darkness half the day, and suddenly being plunged in daylight at the finish of the day's round. So after a particularly heavy twelve hours on the Bakerloo the writer's affections, through a chance telephone call, were transferred to Hyde Park.

Here must be told of the most sporting effort of all sporting efforts. It was close on midnight when several of us entered the Park with orders to report to a certain Major for convoy duties. Not knowing where to find him the simple procedure of stopping the first car that came along and asking for a lift in same was adopted. This particular vehicle was a second-hand Morris-Cowley driven by an American woman who was intending to catch the early morning boat from Southampton for New York. The usual means of transit not being available she had bought a second-hand car that afternoon, had placed it and herself at the disposal of His Majesty's Ministry of Transport. Directly on release from her duties she was driving to Southampton just in time to catch her ship. Three-quarters of an hour after midnight she was still observed conveying the busy and the weary to their several destinations. A truly sporting effort.

The Park appeared to contain a large number of R.A.F. officers and Reservists. One met them everywhere. There were some on administrative duties at headquarters, others were there with their cars ready to go anywhere or do anything and others were driving lorries.

On the convoy that left at dawn that morning for the docks was an ex-R.F.C. pilot who had been given to drive the most decrepit lorry that it has been one's misfortune to see. Surveying this relic with critical eye he pointed to the gear and brake levers and asked in an awed voice, "Which of these two gadgets is for adjusting the tail?"

At the docks one was fortunate to find, at the far end of the convoy, a certain flying officer on leave from Egypt, who



LIFE IN THE OLD DOG.—An F.4 Martinsyde, modified by Mr. Kenworthy, of A.D.C. Aircraft Ltd., to take the A.D.C. Nimbus engine, which is a modification by Major Halford of the Puma, which is itself a modification of the B.H.P., which he designed. The biplane is called the Boreas and has phenomenal speed and climb.

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suggested that loading sacks of flour had made him hungry and that it was breakfast time. This seemed an excellent suggestion.

One's friend proposed that the best place to have breakfast was on a ship, in preference a Spanish ship because he spoke Spanish, and it would be less likely to be invaded by amateur dockers in search of food. As an idea this seemed excellent, so two flour-covered individuals walked along the quayside of Victoria Dock to search for treasure from the Spanish Main. At length over the stern of a fair-sized cargo carrier was displayed the notice, "Keep clear of the propeller," printed in Spanish. One was able to know the meaning as the warning was written in English underneath.

The man from Egypt stood at the foot of the gangway and making a trumpet of his hands yelled up, "*Buenos dios, Señor, buenos dios!*" After trying this several times with no result, he paused for breath, so one took the opportunity to ask what "*Buenos dios*" meant. "I'm not quite sure whether it means "Good day" or "Good God!" replied the man from Egypt, "But something ought to happen."

He shouted his morning greeting again, and something did happen. A tousled head appeared over the side and asked, "Wot jer want, mate?" Anyway, an excellent breakfast was obtained on board in the ship's galley.

One got several bad shocks during this period of unreality. Entering the Club one day one found it to be full of policemen. At first it had the appearance of a raid. It was all right, however. They were merely members off their beat.

One Air Force officer performing special constabulary duties was furious. His sole reason for becoming a special was one of aggressiveness. His desire in life was to hit a Communist or a Bolshie on the head with a lump of wood. He had set his heart on this. He was, much to his wrath and disgust, given a beat that extended round Belgrave Square and back again during the wee small hours.

One was fortunate enough to overhear the remark of a well-known Army general. "Every third volunteer doing essential work seems to be R.A.F. or ex-R.A.F. I think it is a splendid effort." But of course this is as it should be.—B. L.

The Royal Aero Club's Effort.

The Royal Aero Club certainly justified its existence during the strike. Mr. Harold Perrin started, on the first day of the strike, to collect aircraft for transport work, and in a short time had acquired enough to give him at least the rank of Air Commodore.

The following is a catalogue of the machines, pilots, and the mileage flown under Mr. Perrin's direction :—

AIR TRANSPORT.

The London Aeroplane Club.—G-EBMF. D.H. Moth (Cirrus) : F. G. M. Sparks—3,384 miles. G-EBNP. D.H. Moth (Cirrus) : G. T. Witcombe and Sq. Ldr. M. E. A. Wright—3,225 miles.

De Havilland Aircraft Co., Ltd.—G-EBKU. D.H. Moth (Cirrus) : R. W. Reeve, F. T. Courtney, and C. D. Barnard—1,642 miles. G-EBMV. D.H. Moth (Cirrus) : S. L. F. St. Barbe, F. T. Courtney, and A. S. White—1,819 miles. G-EBMP. D.H. Moth (Cirrus) : F. G. M. Sparks—170 miles. G-EBLH. D.H.9 (Puma) : S. L. F. St. Barbe, R. W. Reeve, and F. T. Courtney—2,125 miles. G-EBFQ. D.H.9 (Puma) : A. S. White, R. W. Reeve, and F. T. Courtney—3,025 miles. G-EBEZ. D.H.9 (Jaguar) : C. D. Barnard, F. T. Courtne and R. W. Reeve—3,290 miles.

A.D.C. Aircraft Ltd.—G-EBKV. D.H.9 (Nimbus) : H. I Perry—910 miles. G-EBKO. D.H.9 (Puma) : L. Hamilt and L. P. Openshaw—880 miles. G-EBLC. D.H. (Liberty) : Flg. Off. Vintcent and H. H. Perry—1,630 mile G-EBIO. Bristol (Hispano) : L. Hamilton—1,160 miles.

Bristol Aeroplane Co., Ltd.—G-EBFU. Bristol (Puma) W. Uwins, C. T. Holmes, and C. R. L. Shaw—550 miles.

British Aviation Insurance Group.—G-EBJW. D.H (Puma) : F. Dudley Travers—360 miles.

Berkshire Aviation Co.—G-EAKX. Avro : J. D. Parki son—1,065 miles. G-EBKX. Avro : E. R. Beck—1,0 miles. G-EBKB. Avro : C. F. Kent—1,065 miles. G-EAS Avro : L. Leleu—825 miles.

Southern Counties Aviation Co.—G-EBSG. Avro : R. I Leavey and L. A. Lewis—1,616 miles. G-EAAY. Avr L. A. Lewis—540 miles. G-EBKS. Avro : H. Lawson—1,0 miles.

Mrs. Eliott-Lynn.—G-EBKT. D.H. Moth (Cirrus) : Mr Eliott-Lynn—1,745 miles.

Total miles flown—33,174.

This transport was operated from bases established Lympne, Brooklands, Hendon, Edgware, Yeovil, Plymout Bristol and Croydon.

In addition to this R.Ae.C. organisation Air Transport newspapers was done by the following :—

Surrey Flying Services.—G-EBEP. D.H.9 (Puma) : Lieu Col. G. L. P. Henderson—5,046 miles. Three Avros : A. Muir, E. Smith, and J. J. Flynn—3,053 miles.

The Newcastle Aero Club.—G-EBLY. D.H. Moth (Cirrus) G-EBLX. D.H. Moth (Cirrus) : Major Packman, Baxt Ellis and P. F. Heppel—3,460 miles.

Lympne Unlympnited.

Lympne was an exceedingly busy place during the strik the activity of aircraft not being limited by landing fees a other regulations. Every morning papers arrived from Pari at first only in Air Union machines, but later Imperial Ai ways Ltd. joined in the fun.

Mr. Harold Perrin, Secretary of the Royal Aero Club, too on the collection of and distribution of machines, directir operations from the Club in Clifford Street. At one time I had at Lympne half-a-dozen Moths and the same number D.H.9s.

The London Aeroplane Club Moths were hard at it, pilote by Messrs. Sparkes and Witcombe, and the owners of priva Moths also assisted. Mrs. Eliott Lynn on the original Mot G-EBKT, now "sicklied o'er with a pale coat of blue," ma several notable flights with loads of papers.

Mr. Loader (fortunate name) of the De Havilland Compan was in charge at Lympne, and judging from his jaded loo when one visited the aerodrome on Wednesday, May 12, l must have been pretty hard at it.

Lympne looked very much up to its competition forr judged from the machines seen there, and the sheds had very busy appearance. Mr. Morkham as usual rose to tl occasion and ably assisted by Sergeant-Major Jupe ran thin with a total absence of fuss.

On Thursday, May 5, a number of the Lympne machin were detailed to concentrate in the West Country, at Pl



THE BOREAS AGAIN.—Side view of the A.D.C. Boreas, with A.D.C. Nimbus engine,—modernisations of the Martinsyde and Puma respectively.

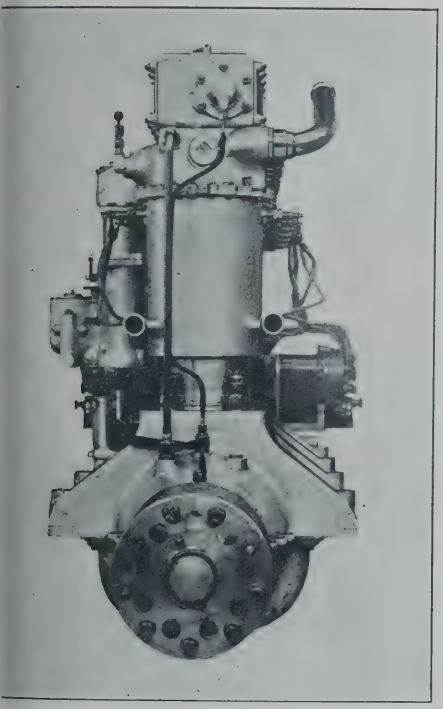
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Stroke	...	190 m/m.
Normal r.p.m.	...	1,450.
Maximum r.p.m.	...	1,600.
Normal b.h.p.	...	305 @ 1,450 r.p.m.
Maximum b.h.p.	...	335 @ 1,600 r.p.m.
Petrol Consumption		.505 pts. (.286 litres) per h.p. hour.
Oil Consumption	...	.017 pts. (.009 litres) per h.p. hour.
Compression Ratio	...	5.4 : 1.
Weight, Dry	...	655 lbs. (297 kgs.)
Weight per h.p.	...	1.95 lbs.

ECONOMY.

We desire to draw special attention to the remarkably low petrol and oil consumption during Type Test of the "NIMBUS," which we believe constitutes a record.

Full particulars obtainable from the manufacturers:

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Telephone: Regent 6240.
Works and Aerodrome: CROYDON, SURREY.
Cables: "Airdisco, London."

mouth and Yeovil. Here they were joined by four Avros of the Berkshire Aviation Tours and various other D.H.9s which had been raised in the meantime.

Lympne was reinforced by two Avros belonging to the Southern Counties Aviation Co. and Mr. Dudley Watt and his Sopwith Grasshopper.

Some of the Moths, including that of Mrs. Eliott Lynn, returned from Yeovil and at the end of the week the first blood was drawn. Mrs. Eliott Lynn broke her wrist in starting up her Moth and was therefore put out of action. She allowed her Moth to be flown thereafter by Mr. Dudley Watt, who flew off with the intention of reaching Yeovil, instead of which he landed at Tavistock.

One rather amusing thing happened to Mr. Perry. He was flying on an A.D.C. D.H.9 from Lympne to Nottingham with a big load of *Daily Mails,* and was forced down by engine trouble at Gravesend. He promptly got into touch with *The Daily Mail,* and asked them what he should do with the papers. They told him to find their local agent and sell him the papers, which he did.

A number of round trips were made by Imperial Airways' machines, including regular services such as Croydon—Exeter, Lympne—Brooklands, Lympne—Newcastle, etc., with papers.

Lt.-Col. G. L. P. Henderson did wonderful work on the Surrey Flying Services' D.H.9 and his average mileage per day worked out at something like 800.

On the passenger services it looks as though all records will have been broken as to numbers, though at the moment of writing the complete figures are not available. The Air Union, with a true French eye for opportunity, doubled their fares. But Imperial Airways refused absolutely to profiteer.

The De Havilland Company, Imperial Airways Ltd., A.D.C. Aircraft Ltd., the Surrey Flying Services, the Berkshire Aviation Tours, the Southern Counties Aviation Co., the Flying Clubs, the private owners, the pilots, mechanics, and, last, but by no means least, Mr. Harold Perrin, deserve the thanks of the Nation for a very fine co-operative effort and for demonstrating clearly the great use to which air transport could be put in normal times as well as in times of stress.—G. D.

Strike Breaking in the West Country.

Quite one of the best shows in the strike-breaking use of aircraft was that organised by the Westland Aircraft Works at Yeovil for the distribution of *The Daily Mail.* The Westland Aerodrome was made into a kind of Western depot for the aeroplane service organised by Mr. Harold Perrin at the Royal Aero Club. The local organisation was done by Mr. J. C. Joynt—now of the design department of the Westland Works, but formerly an R.A.F. pilot—with the assistance of Mr. Marshall of *The Daily Mail.* And the mechanical operations of keeping the machine in order was in the hands of Mr. Gibson, the Works Manager of the Westland Company.

The strike having been declared on Tuesday, May 4, the Westland Aerodrome was ready on Wednesday to begin operations. Over 300,000 copies of *The Daily Mail,* which had been printed in Plymouth, were brought up by road during the night, and 150,000 copies of these were subsequently despatched by aeroplanes, which were waiting for them, to such places as Cardiff, Norwich, Birmingham and Bournemouth. In case of emergency the Westland Aerodrome was prepared in the record time of 1½ hours for night landings.

The machines used were Avros belonging to the Berkshire Aviation Tours, D.H. Moths belonging to the London Aeroplane Club, D.H.9s belonging to A.D.C. Aircraft Ltd., and the de Havilland Company, a Handley Page W.8 and a D.H.50 belonging to Imperial Airways, and some Bristol school machines from the Bristol Company.

The pilots who operated from Yeovil were: Major L. P. Openshaw, the Westland Company's test pilot; Mr. Parkinson, Mr. Beck, Mr. Reeve and Mr. Leleu of the Berkshire Company; Mr. Leavey of the Southern Counties Company; Sq. Ldr. Maurice Wright, Mr. Sparks and Mr. Witcombe of the London Aeroplane Club; Flg. Off. Vintcent, R.A.F. (on leave); and Lieut.-Col. G. L. P. Henderson of the Surrey Flying Services.

The result of the operations at Yeovil has been to emphasise to all aviation people the convenient situation of Yeovil as an air centre for South-Western England. If and when air routes are developed in England Yeovil will certainly be a well-known junction. And when private flying grows Yeovil is sure to be a popular landing place, being situated so close to so much interesting surrounding country. Mr. R. A. Bruce, Mr. Petter, and the whole Management of the Westland Company are to be congratulated on having taken such prompt steps as they did to make the best use of their facilities.

G.D.'s Notions.

A member of the Royal Aero Club, who became a volunteer 'bus driver, was driving down Regent Street during the strike, with a full load of passengers, when it occurred to him that he should go to the Club to get some important letters. As his hours were so long he did not have much opportunity for doing so when off duty, so he coolly diverted his 'bus along New Burlington Street to Clifford Street, pulled up outside the Club, claimed the mail, re-embussed, and proceeded with his load and his letters on his normal route.

The Staff of The Aeroplane for once became quite useful. The Editor, scattering strikers and others in his accustomed manner with the Editorial Talbot, drove *British Gazettes* to Southampton and Calshot, and was mighty pleased at leading a convoy of six speed cars from London to Calshot an hour and a-half sooner than the preceding convoys. The Technical Editor helped to print *The Times.* The unlicensed humorist of the Staff endangered the General Public when were both in and out of his car by driving vast distances vastly overloaded.

One has been told that owing to the size of the print in the last two issues of The Aeroplane a considerable impetus has been given to the oculists' profession.

A Visit to Witney.

During the first week of the strike one had the pleasure of visiting the Berkshire Aviation Tours' headquarters at the old R.A.F. Aerodrome at Witney near Oxford. Mr. Fred Holmes happened to be away, but one was shown round by Mr. C. Ritchie, the firm's works manager, chief ground engineer and constructional specialist, who is in charge.

The parts of the old aerodrome buildings which have been taken over by the Berkshire firm comprise a big workshop which at a guess one would say could hold four Avros in process of erection, another shop (at present used as a store quite big enough to hold a couple more, and an engine shop which if the firm grows—as one hopes it will—could accommodate fully fifty fitters. At present the staff is somewhere about a dozen men and boys, but if all goes well there the shops ought to be pretty fully occupied by men and materials in the course of the next year or so.

Anybody who appreciates good workmanship would certainly be pleased by what the Berkshire people have to show. Mr. Ritchie is one of those people who takes a pride in his work for the work's sake. And he knows the construction of an Avro inside out.

When one was there Mr. Parkinson's famous black-and-yellow wasp-striped Avro was in for an overhaul after nearly two years of hard flying. And the fact that there was so little which really needed doing to the machine shows how good her reconditioning was originally. The overhaul was necessary rather to tighten up everything after so much work than to replace any individual parts.

Another machine, approaching completion, had the plane pointed in alternate broad stripes of aluminium, black and scarlet. It ought to create something of a sensation among the country folk when it starts its aerial gyrations.

Most of the Avros which the firm has in use by its various joy-ride crews, which are sprinkled about the country, have been built up from what was originally practically scrap stuff. In the store shop are the fuselages of four or five Avros practically bought from the Disposals scrap-heap, having apparently got there before the Aircraft Disposals Company Ltd. came into existence. Seemingly there was nothing wrong with them. They appear to have been scrapped only because they were not wanted. The R.A.F. people just sawed through a couple of longerons and threw the things on the scrap heap. All the fittings and other parts are perfectly good and in some cases it is only necessary to renew a couple of longerons and re-cover and dope the machine.

In the engine shop Mr. G. E. Blanchard, the firm's engine specialist, has done work fully up to the standard of the aeroplane shop. One saw a B.R.2 engine which he had reconditioned in spare moments, between working on the firm's joy-ride engines, and one believes that even Captain Bentley himself would agree that it is equal to new.

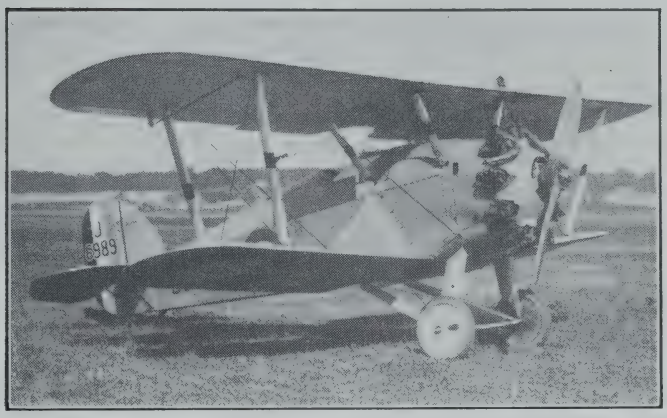
Mr. Blanchard has achieved considerable success with what is commonly known as "hotting-up" Clergets. The standard 130 h.p. Clerget happens to take the same pistons as the B.R.1. But the piston-head comes about four millimetres nearer to the cylinder head than it does in the standard Clerget pistons and so with B R pistons the engine has a slightly higher compression.

When thus fitted and with certain other little fakements of Mr. Blanchard's own, the 130 Clerget turns an airscrew designed for a B.R.1 engine at something like 1,300 r.p.m. and an Avro so fitted puts up an extraordinary performance in the way of weight-lifting and getting-off quickly. The re-built Clergets as sent out by Mr. Blanchard have done exceedingly good work in the Berkshire Tours and stand up splendidly to the gruelling of constant landings and gettings off and ticking over on the ground.

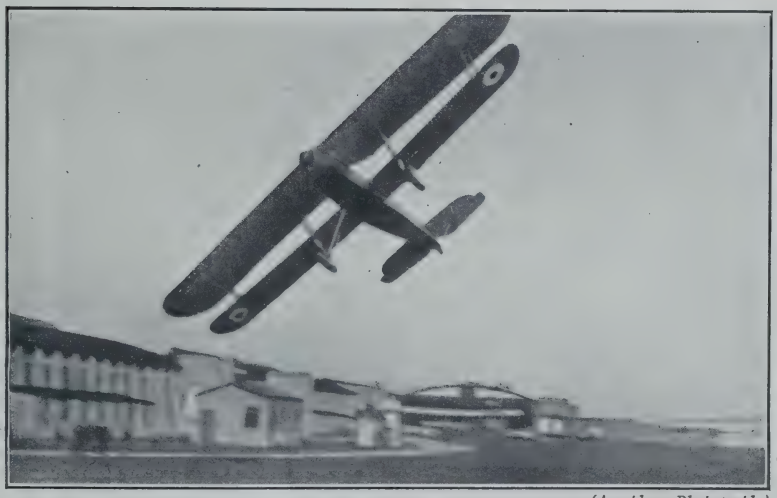
Altogether one was very pleased with everything that one saw at Witney, and one can assure the readers of The Aeroplane that so long as the ground engineers who are operating with the various joy-ride crews round the country only keep the machines up to the standard of condition in which they are sent out from Witney there cannot be any machines in the country in which flying is safer.—C. G. G.

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, May 4, 1926.

GENERAL DUTIES BRANCH.—Air Vice-Marshal John Miles Steel, C.B., C.M.G., C.B.E., relinquishes his appointment as an additional member of the Air Council on appointment as Air Officer Commanding Wessex Bombing Area, R.A.F., Apr. 12, 1926.

Air Commodore Thomas Charles Reginald Higgins, C.M.G., relinquishes his appointment as Director of Training, Air Ministry, Apr. 24, 1926.

Group Capt. Norman Duckworth Kerr MacEwen, C.M.G., D.S.O., is appointed Deputy Director of Training. Air Ministry, May 1, 1926 (vice Group Capt. Lionel Wilmot Brabazon Rees, V.C., O.B.E., M.C., A.F.C.).

The undermentioned Plt. Offs. are promoted to the rank of Flg. Off. :—Horace Miller, Feb. 8, 1926; David John Lloyd, Feb. 8, 1926 (since deceased); Albert Theodore Stanley Studdert, Feb. 15, 1926; William Edward Symonds, Mar. 8, 1926; William Edward Gray, Mar. 8, 1926; Cyril Ralph Cubitt, Mar. 30, 1926; Christopher Wilfred Switzer, Apr. 15, 1926; James Andrew Charles Florence, Apr. 15, 1926.

Wing Cdr. John Charles Quinnell, D.F.C., is placed on half-pay, Scale A, with effect from Apr. 23, 1926, and is transferred to Scale B, with effect from June 1, 1926. Flg. Off. Henry Longfield Beatty is restored to full pay from half-pay, Apr. 16, 1926. Flt. Lt. Frank Leonard Charmbury Butcher is placed on the retired list at his own request and is granted permission to retain the rank of Sq. Ldr., Apr. 15, 1926. Flg. Off. Godfrey Webster Dean is transferred to the Reserve, Class A, May 1, 1926. Plt. Off. Charles John Pavia resigns his S.S. comn., May 5, 1926.

The S.S. comns. of Plt. Off. on probation Samuel Bailey Flood is terminated on cessation of duty, May 5, 1926. Flg. Off. Charles Drummond Woodyatt (Lt., Northants Regt.) relinquishes his temp. comn. on retirement from the Army, Apr. 28, 1926. Flg. Off. Christian André Ravn (Lt., R. Welch Fus.) is removed from the service, Apr. 20, 1926.

STORES BRANCH.—Flg. Off. Athol George Stratford Tuke is granted a perm. comn. in this rank, with effect from Sept. 7, 1925, on completion of probationary service. Plt. Off. on probation George Harry Doveton is confirmed in rank, Feb. 10, 1926. Flt. Lt. Frank Paterson is placed on the retired list, May 4, 1926.

MEDICAL BRANCH.—The undermentioned are granted S.S. comns. as Flg. Offs. for three years on the Active List, with effect from and with seniority of, Apr. 14, 1926 :—Ronald Johnstone Irving Bell, Richard George Freeman. Flt. Lt. Michael Coghlan, M.B., relinquishes his temp. comn. on ceasing to be employed, May 1, 1926.

MEMORANDA.—Flg. Off. Sidney George Wybrow is granted permission to retain the rank of Flt. Lt. 2nd Lt. Frank Hathorn Towler resigns his hon. comn., Apr. 17, 1926.

RESERVE OF AIR FORCE OFFICERS.—Martin John Berlyn is granted a comn. in Class A.A., General Duties Branch, as a Plt. Off. on probation, Apr. 19, 1926. Plt. Off. Leonard Stewart Webb is confirmed in rank, Apr. 13, 1926.

The undermentioned relinquish their comns. on completion of service, May 1, 1926 :—Flt. Lt. Leslie Reynolds, Flg. Off. Edward Charles Dickens. The comns. of the undermentioned Plt. Offs. on probation are terminated on cessation of duty :—Harry Roome Hayden, Apr. 13, 1926. Lionel Everard Benjamin Alexander, Apr. 15, 1926.

PRINCESS MARY'S R.A.F. NURSING SERVICE.—Miss Margaret Elizabeth Cunningham resigns her appointment as Sister, Apr. 14, 1926.

ERRATUM.—*Gazette* of Apr. 20, 1926, page 2706 :—The date of effect of the appointment of Flt. Lt John Campbell Hill Allan, M.B., is Apr. 20, 1926.

Air Ministry, May 11, 1926.

GENERAL DUTIES BRANCH.—The undermentioned Plt. Offs. are promoted to the rank of Flg. Off. :—Charles Edson Galpin, Feb. 28, 1926; Cyril Vivian Williams, Mar. 30, 1926; Ronald John Stevens, Apr. 15, 1926.

The undermentioned Plt. Offs. on probation are confirmed in rank :—Apr. 16, 1926 : Geoffrey Bradbury, Ronald Cecil Howe Monk, Edward George Lambert Russell, Arthur Wright Shaw.

The undermentioned are placed on half-pay, Scale B, from Mar. 29, 1926, to Mar. 31, 1926, inclusive :—Sq. Ldr. Richard Cecil Hardstaff; Flt. Lt. John Denis Breakey, D.F.C.

Flg. Off. Henry Julian Toye is transferred to the Reserve, Class A, May 9, 1926. Plt. Off. Montague Ernest de Lannoy Hayes resigns his perm. comn., May 12, 1926. Flg. Off. Francis William Curtius George Tussaud relinquishes his S.S. comn. on account of ill-health, May 12, 1926.

MEDICAL BRANCH.—Denis Oliver, B.A., is granted a S.S. comn. as a Flg. Off. for three years on the active list, with effect from and with seniority of, Apr. 26, 1926, and is seconded for employment at the Hull Royal Infirmary from that date. Flt. Lt Duncan McLaren, M.B., is promoted to the rank of Sq. Ldr., May 4, 1926.

MEMORANDA.—The permission granted to the undermentioned Lts. to retain rank is withdrawn on their enlistment in the Supplementary Reserve, Army :—Sydney Adams, Apr. 19, 1926; Douglas Gilbert Prentice, Apr. 20, 1926.

RESERVE OF AIR FORCE OFFICERS.—Plt. Off. Montague Ernest de Lannoy Hayes is granted a comn. in Class A, General Duties Branch, in this rank, May 12, 1926. The undermentioned Flg. Offs. relinquish their comns. on completion of service :—Apr. 20, 1926, Wilfred Anderson, Cyril Bunch, Rupert Cyril D'Arcy Gifford, Frederick William Hartridge, A.F.C.

May 1, 1926, Horace Haycock, M.C.

May 8, 1926, Eric O'Connor Parsons, Walter Ridley, D.F.C.

AUXILIARY AIR FORCE.—GENERAL DUTIES BRANCH : The undermentioned to be Plt. Off. :—No. 601 (County of London) Bombing Sqdn. : Edward Douglas Whitehead Reid, M.B, May 11, 1926.

Air Ministry, May 18.

GENERAL DUTIES BRANCH.—Flg. Off. H. B. Williams is transferred to the Reserve, Class A (May 3) : Flg. Off. J. H. Tanner (Lt., R.A.) relinquishes his temp. comn. on return to Army duty (May 3).

MEDICAL BRANCH.—Flt. Lt. J. Prendergast, M.B., B.A., is transferred to the Reserve, Class D2 (May 15) ; Capt. P. E Brown, Army Dental Corps, is granted a temp. comn. as a Flt. Lt., on attachment to the R.A.F. (May 1) (he will continue to receive emoluments from Army funds) ; Flt. Lt. H. H. Mallett (Capt., Army Dental Corps) relinquishes his temp. comn. on return to Army duty (Apr. 30).

RESERVE OF AIR FORCE OFFICERS.—The following are granted comns. in the General Duties Branch as Plt. Offs. on probation :—CLASS A.—R. D. Hambrook (May 18). CLASS AA.—E. I. C. Wyllie (May 3) ; J. S. M. Michie (May 6). Plt. Off. on probation H. W. Knott is confirmed in rank (May 10).

The following Flg. Offs. are transferred from Class A to Class C :—R. G. R. Godby (Apr. 12) ; H. W. Beck (May 11). The notification in the *Gazette* of Nov. 10, 1925, concerning Plt. Off. W. F. A. Snell is cancelled.

PRINCESS MARY'S R.A.F. NURSING SERVICE.—Miss K. I. Sweeny resigns her appointment as Staff Nurse (May 1).

Appointments.

Week ending May 18.

GENERAL DUTIES BRANCH.—Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., to R.A.F. Depot, Uxbridge, Supernumerary, 3/5.

Wing Commander H. L. M. Brock, D.S.O., to Station H.Q., Catterick, to command, 8/5.

Squadron Leaders T. G. Bowler, to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 14/4. J. O. Andrews, D.S.O., M.C., to R.A.F. Staff College, Andover, 30/4. R. Halley, D.F.C., A.F.C., to R.A.F. Depot, Uxbridge, 1/5. K. M. St. C. G Leask, M.C., to R.A.F. Depot, Uxbridge, 25/5.

Flight Lieutenants G. F. P. Warren, to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 14/4. C. Hanson-Abbott, to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 14/4. P. E Gwyer, M.B.E., to School of Technical Training (Men), Manston, 9/5. C. S. Richardson, M.B.E., to Aircraft Depot, Iraq, 23/4.

Flying Officers N. S. Paynter, to No. 31 Sqdn., India, 21/4. J. G Western, M.B.E., to No. 28 Sqdn., India, 7/4. L. T. Kerry, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 8/5. F. C. T. Rowe, to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 7/5. F. W. Moxham, to Aden Flight, 21/4. S. H. Reynolds, to No. 1 Stores Depot, Kidbrooke, 18/5. (Hon. Flt. Lt.) R. Kennedy to School of Naval Co-operation, Lee-on-Solent, 17/5.

Pilot Officers W. T. Holmes, to No. 60 Sqdn., India, 19/4. L. E McGoverne, to R.A.F. Depot, Egypt, 29/4.

MEDICAL BRANCH.—Squadron Leader H. L. Burton, M.B., to R.A.F. British Hospital, Iraq, 28/3.

Flight Lieutenant R. L. C. Fisher, M.B., to No. 24 Sqdn., Kenley, 10/5. (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., to H.Q., Wessex Bombing Area, Andover, 28/4. Flight Lieutenant (Dental) P. E Brown, to R.A.F. Depot, Uxbridge, on attachment from Army Dental Corps, 1/5.

Flying Officers J. P. Hederman, to Home Aircraft Depot, Henlow, 10/5. E. J. Mockler, M.B., to R.A.F. Reception Depot, West Drayton, 11/5. R. J. I. Bell, to R.A.F. Depot, Uxbridge, 4/5; to No. 1 F.T.S., Netheravon, 11/5.

STORES BRANCH.—Flight Lieutenant W. R. P. Allen, to No. 47 Sqdn., Egypt, 15/4. Flying Officer M. W. Keey, to No. 31 Sqdn., India, 20/4.

Week ending May 25.

GENERAL DUTIES BRANCH.—Group Captain L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., to H.Q., Transjordan, Supernumerary, pending taking over command, 6/5.

Squadron Leaders J. C. Russell, D.S.O., to Air Ministry, Directorate of Organisation and Staff Duties, 1/5. J. Sowrey, A.F.C., H. Gordon Dean, A.F.C., M. Henderson, D.S.O., A. W. F. Glenny, M.C., D.F.C., G. B. A. Baker, M.C., H. K. Thorold, D.S.C., D.F.C., A.F.C., to R.A.F. Staff College, Andover, 9/5. J. J. Breen, to R.A.F. Staff College, Andover, 1/5.

Flight Lieutenants A. H Wann, P. S. Jackson-Taylor, A. L. Fiddament, D.F.C., G. E. Gibbs, M.C., G. S. N. Johnston, R. M. C. Macfarlane, M.C., R. J. Divers, M.B.E., and A. C. Bayley, to R.A.F. Staff College, Andover, 9/5. J. H. Dand, M.B.E., to School of Naval Co-operation, Lee-on-Solent, 24/5.

Flying Officers A. H. D. Livock, to R.A.F. Base, Calshot, 21/5. H. M. Whittle, to R.A.F. Base, Calshot, 3/5. C. H. W. Boldero, to Night Flying Flight, Biggin Hill, 24/5.

Pilot Officers.—The undermentioned Pilot Officers are posted to No. F.T.S., Netheravon, on appointment to SS. Coms. on probation) with effect, 8/5. J. D. Allcroft, A. Allen, C. F. Ashton, E. S. Baverstock, S. C. Bell, E. L. Burslem, A. M. Butt, J. F. O'R. Coleman, M. R. Edmondes, L. E. R. Fisher, M.C., P. A. Hawkesworth, C. F. Hockley, A. M. D. Howes, G. H. G. S. Jenkins, W. E. P. Johnson, L. T. Keens, F. L. Lawrence, P. G. Lucas, I. G. Martin, A. L. Mortimer, K. C. Netherton, S. Pritchard-Barrett, H. J. G. E. Proud, B. F. O. Smith, R. H. C. Taylor, E. D. Turner

STORES BRANCH.—Pilot Officer G. H. Doveton, to Stores Depot, Iraq, 7/5.

Short Service Commissions.

The Air Ministry announces :—

Vacancies exist for short service officers in the General Duties branch of the Royal Air Force for the courses of flying training commencing in July next, and applications are invited from candidates, who must be between 18 and 25 years of age, have received whole-time education at least up to the age of 16, and possess a sound physique and good eyesight.

Short service commissions are granted for 5 years' service on the active list, followed by a period of 4 years on the Reserve. Selected candidates will be gazetted as pilot officers on probation and provided they make good and pass the tests laid down they are eligible for promotion to the rank of Flying Officer after 18 months' service.

The present rates of pay are 15s. 2d. a day for Pilot Officers, 18s. 10d a day for Flying Officers under two years' service as such, and £1 1s. 8d a day for Flying Officers after two years' service in the rank. When accommodation, fuel, light, rations and personal attendance are not available, allowances amounting to about 8s. a day ("unmarried" rates in home commands), are issuable in addition to pay. On transfer to

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(Engine - 27-60 H.P. "CIRRUS.")

The De Havilland "MOTH" has been designed entirely in the light of modern experience, and fulfils in every respect modern training requirements. Its controls are light, effective and straightforward at all speeds. It is fitted with a 4-cylinder air-cooled engine, which is as reliable as that of an automobile. Its fuel and oil consumptions for school work are less than four gallons and one pint per hour respectively.

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the Reserve on completion of five years' service on the active list officers receive a gratuity of £375.

The number of short service officers who can be selected for permanent commissions is necessarily very limited, but under a recent decision short service officers who have completed two years' service, are under 25 years of age, and are recommended, may take part in a competitive examination with a view to selection to undergo specialist training in aeronautical engineering and to retention in the service on permanent commissions. Success in this examination will depend largely on mathematical and scientific attainments.

Requests for forms of application and copies of the detailed regulations should be made in writing to the Secretary, Air Ministry, Adastral House, Kingsway, London, W.C.2.

Fatal Accidents.

The Air Ministry regrets to announce that as the result of an accident at Hinaidi, Iraq, to a Sopwith Snipe of No. 1 Squadron, Hinaidi, on May 13, Flg. Off. Stuart Adolphus Young, the pilot and sole occupant of the aircraft, was severely injured, and died of his injuries on May 14.

The Air Ministry regrets to announce that as the result of an accident at Upper Caterham, Surrey, to a Gloucestershire Grebe of No. 32 Squadron, Kenley, on May 14, Flg. Off. Basil Douglas John Broadway, the pilot and sole occupant of the aircraft, was killed.

The Air Ministry regrets to announce that as the result of an accident at Andover, Hampshire, to a Fairey Fawn of No. 12 Squadron, Andover, on May 17, No. 84631, Sergeant Ralph England Hawkins, the pilot of the aircraft, and No 335394 L/AC. Sydney Marsh Cox, were killed.

The R.A.F. Cairo-Cape Town Flight.

The Cape Flight, R.A.F., under Wing-Commander C. W. H. Pulford, O.B.E., A.F.C., reached Mongalla on May 19, Malakal on May 20, and Khartum on May 21.

The Independent Force (R.A.F.) Dinner.

The Eighth Annual Re-Union Dinner of the Independent Force, R.A.F., will be held at the Connaught Rooms, Great Queen Street, on Friday, June 11, at 7.45 p.m.

Air Chief Marshal Sir Hugh Trenchard, Bart, G.C.B., D.S.O., Chief of the Air Staff, will be in the Chair.

It is hoped that Group Captain H.R.H. the Duke of York, K.G., K.T., G.C.V.O., will be able to attend.

Tickets for members of the Dinner Club are 10s. 6d. (exclusive of wines) and for non-members 12s. 6d. The amount may either be remitted to the Secretary or paid at the Dinner.

Evening Dress with Miniatures will be worn.

Members of the Dinner Club are reminded that the annual subscription of 5s. is now due.

A Middle East Air Pageant.

The following account of the Annual Air Exercises of the R.A.F. in Egypt is taken from *The Overseas Airman* with due acknowledgments.

The Annual Air Exercises of the Royal Air Force in Egypt took place at South Camp, Heliopolis, on Mar. 30, before a gathering of more than 5,000 people. The display was under the direction of Group Captain F. W. Bowhill, C.M.G., D.S.O., whose principal assistants were Wing Cdr. J. E. A. Baldwin, D.S.O., O.B.E., Wing Cdr. T. M. Mulcahy-Morgan, M.C., Wing Cdr. L. D. McKean, O.B.E., and Wing Cdr. D. Harries, D.F.C.

During the afternoon Air Vice-Marshal Sir Oliver Swann, K.C.B., C.B.E., and the Officers of the R.A.F. were "At Home." Among the guests were His Excellency the High Commissioner and Lady Lloyd, General Sir Richard and Lady Haking, Lord Lee of Fareham and Lady Lee, Lady Archer and the Prime Minister of Egypt.

All Units in the Command took part in the various events which began with the Standard Avro Race. For this race each Unit provided an Avro and a pilot, the machines were pooled and ballotted for by the pilots. The race consisted of three laps of a seven-mile course and was won easily by Flt. Lt. Blackford (H.Q.M.E.), with Flt. Lt. J. I. T. Jones, D.S.O., M.C., D.F.C., M.M. (Heliopolis) second, and Flt. Lt. G. G. Banting (R.A.F. Depot) third. An excellent display of air drill by Vimys and D.H.9as from 216 and 47 Squadrons followed and in spite of the bumpy weather the landing in formation was particularly good.

The Landing-on-the-Mark competition took place next. The eliminating trials had left only three Units, No. 4 F.T.S., No. 208 Sqdn., and Heliopolis Details. This event was won by Flg. Off. Waite of No. 4 F.T.S. No. 208 Squadron then gave an exhibition of Message-Picking-up and Supply-Dropping-by-Parachute after which Sq. Ldr. J. Noakes, A.F.C., M.M., gave a wonderful display of crazy flying on an Avro. His idea of a pupil doing his first solo was greatly appreciated.

Three teams competed in the Relay Race representing Aboukir, Cairo and the Canal Zones. This was won by the Heliopolis (Cairo) team. No. 4 F.T.S. then gave a display of aerobatics and upside-down flying on Avros. No. 208 Sqdn. gave a very fine display of formation flying controlled by Radio-Telephony. All their movements were executed w great precision.

The next event was an air combat between two Bristols Heliopolis Details and a formation of No. 208 Sqdn.'s Vim This proved one of the most thrilling spectacles of the aft noon. After an exciting scrap with the Vimys one of t Bristols was shot down in flames. The realistic pyrotechn effects made many of the spectators shudder. The Gra Finale of the Display was an attack on a hostile aerodrom "Works and Bricks" had erected a most realistic block hangars on the far side of the aerodrome and over these t flag of Ruritania fluttered proudly. Peeping from t hangars were two blood-red machines. Suddenly a Bris Fighter appeared on reconnaissance and immediately thr Ruritanian scouts leapt into the air and drove it off. B here a formation of D.H.9as appeared and giving cha scattered them. The Bristol Fighters reappeared and sh up the hangars. They were closely followed by a formati of Vimys which bombarded the aerodrome and set fire to t hangars. The spectators were thoroughly enjoying a re blaze without the sounding of the fire alarm when sudden a Victoria appeared, landed and disgorged bodies of troo who put a finishing touch to the scene by attacking the r treating Ruritanians with Lewis guns.

The R.A.F. Depot Band under F-S. May provided a splend musical programme.

An Airship Appointment.

It is announced that Mr. A. H. Hall, C.B.E., of the Mechan cal Engineering and Building Works Department, Roy Ordnance Factories, has been transferred to the service the Air Ministry, and has been appointed to be Superinte dent of Airship production at the Airship Works, Cardin ton.

According to *The Times* Mr. Hall was educated at Clift and at Trinity Hall, Cambridge, where he obtained a Fir Class in the Mechanical Sciences Tripos. He entered t service of the War Department in 1904. During the W 1914-18 he held positions in the Royal Ordnance Factorie the Admiralty, and the Ministry of Munitions. He h since then served with the Surplus Stores Liquidation D partment.

Eastchurch Station (R.A.F.) Sports Summary

Boxing.—During the winter three tournaments have been arrang against the Royal Navy at Sheerness for a placque presented by t Officers. In the first stage we lost at the sub-Depot, Sheerness, 5 points, but on the return bout at Eastchurch we won by 2 poin The final stage took place at the R.N. sub-Depot, the home te winning by 14 points. At the Eastchurch meeting the novices a boxed off their finals and some promising talent was displayed. T outstanding feature was a bout between AC. Cass and AC. Hollis in which both showed great pluck and endurance under punis ment. There was very little to choose between them and the verd went to Cass after an extra round.

Cross-Country Running.—This has been well looked after by S Simpson, who is, however, shortly leaving the Service. Fortunate the Station will have a hard-working successor in L-AC. Wilkinso Good runs have taken place against Manston, the Training Ba R.E., and several Kentish teams. The season can be regarded as successful one. L-AC. Gibbs, L-AC. Ackhurst, Willot, Kennedy, Bu and Manning have been most prominent in these runs. In the Gro Competition at Ruislip in March the Gunnery School secured seco place and L-AC. Ackhurst ran third.

Hockey.—Owing to posting several changes have been necessary the team, particularly in the forward line. The Station has two cellent goalkeepers in AC. Pierce and L-AC. Reid as the former h played for the South in R.A.F. trials and the latter is an old W of England player. F-S.s Bird and Oland have been consistent full-back. AC. Favel has done well on the wing and Mr. Hall h developed into a successful centre-forward. Games have been play against Manston, R.E. (Chatham), Cavalry Depot (Canterbury), and number of civilian clubs.

Association Football.—The Station team has played brilliantly times, but too often these flashes have been followed by a ve moderate display. In the Kent League, Div. II, the team did ve well about half-way through the season, thanks to AC. McIntos V.C., who has played a consistently good game at centre-half. S Giles, the captain, has proved a versatile player and AC. Attwood prolific goal-scorer. In the Senior R.A.F. Cup Competition Ea church beat Cranwell and Halton, but were beaten in the final Flowerdown. The Station League has provided some exciting a amusing football and the four grounds have been much used.

Rugby Football.—The Station team has suffered from a continu changing of players during the season, due to posting. The team w exceptionally good at the beginning of the season and won sever matches. Six of the best players left in January. In future an e deavour will be made to form a team from the permanent staff a to rely less on attached personnel. Thirteen matches were played a six were won. The opposition consisted of R.A.F., Manston, R.A.F. Hawkinge, R.E., Chatham, United Services "A," Chatham, King School, Rochester and Maidstone R.F. Club.

Fencing.—This sport is not so popular as it might be, but t Station has succeeded in producing a fairly sound team. The fi bout was against Manston and resulted in a draw. Manston w the return match. Three representatives were sent to the R.A. Tournament at Uxbridge: Sjt. Scott, Cpl. Turner and L-AC. Lampar All three reached the final pools. Cpl. Turner won the Sabres a gained second place in the Foils


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NO. 2 ARMY CO-OPERATION SQUADRON, R.A.F.

No. 2 Squadron, R.F.C., was formed at Farnborough in 1912 under the command of Major C. J. Burke, The Royal Irish Regt. It was the first Squadron to move from its parent depôt to work as a complete unit at a new station, as the whole Squadron moved by air and road to Montrose in February, 1913. Five officers flew all the way and the mechanics in charge of the machines and transport did their work so well, often at night in the rain, that the machines and lorries arrived at Montrose in perfect order.

In September, 1913, six machines of the Squadron took part in the Irish Command manœuvres. Each machine flew on an average about a thousand miles in reconnaissance and about a thousand in the journeys to and fro.

On Nov. 22, 1913, Capt. Longcroft flew from Montrose to Portsmouth and back to Farnborough without landing in 7 hours 20 minutes.

Except for the period June-July, 1914, when it took part in the Concentration Camp at Netheravon, the Squadron remained at Montrose until the outbreak of war.

On Aug. 3, 1914, the pilots of the Squadron, on B.E.2s, started to fly south, and on Aug. 12 they were all at Dover. Their first machine, piloted by Lieut. Harvey-Kelly, landed at Amiens at 8.20 a.m. on Aug. 13. The Squadron carried out its first reconnaissances on Aug. 20, Major C. A. H. Longcroft being the pilot and Capt. U. J. D. Bourke the observer in one machine, and Capt. G. E. Todd, the pilot, with Lieut. E. R. L. Corballis the observer in the other. On Aug. 22, Sjt.-Maj. D. S. Jillings, flying with Lieut. M. W. Noël as pilot, was wounded, the first British soldier wounded in the War, and the first aeroplane casualty in any war.

During the first battle of Ypres, in October, the Squadron carried out continuous strategical and tactical reconnaissance; the bulk of the Squadron working with the 1st Corps.

In November, 1914, Major Burke, promoted to Lieut.-Col., was given command of the 2nd Wing and was succeeded in the command of No. 2 Squadron by Major G. W. P. Dawes.

In February, 1915, a flight of wireless machines was allotted to No. 2 Squadron and valuable artillery work was done during the battle of Neuve Chapelle.

In March, 1915, the command of the Squadron was handed over to Major T. I. Webb-Bowen, who held it until he was transferred to the Home Establishment in June, 1915, and Major J. H. W. Becke took over.

The first V.C. granted to the R.F.C. was won on Apr. 26, 1915, by 2nd Lieut. W. B. Rhodes-Moorhouse of No. 2 Squadron, who unfortunately died of his wounds on the following day.

During the Battle of Loos, in September, 1915, No. 2 Squadron at Hesdigneul allotted two flights for counter-battery work and one for trench bombardment and co-operated with artillery on a front of three and a-half miles.

Major C. F. de S. Murphy took over the command of the Squadron in November, 1915. In April, 1916, Major Murphy was succeeded by Major R. A. Cooper, who commanded the Squadron until August, 1917, when Major W. R. Snow, M.C., took over the command.

The establishment of the Squadron was increased in June, 1916, from 12 to 18 machines.

During the beginning of the Battle of the Somme in July, 1916, No. 2 Squadron detached machines to bomb railways at Busigny, Don and Le Chateau operating from Fienvillers.

During the Arras offensive in April, 1917, No. 2 Squadron was engaged in successful artillery work with the 1st Corps.

By July, 1917, the Squadron was entirely re-equipped with Armstrong-Whitworth machines. Bombing attacks became an important part of the work of the Squadron in October, 1917, and on the night of the 30th/31st of that month bombs were dropped on Henin-Lietard and Billy Montigny. The total weight of bombs dropped by the Squadron during that night and the following day exceeded 1½ tons.

Second Lieutenant A. A. MacLeod, of No. 2 Squadron, was awarded a V.C. for his gallant part in a fight on Mar. 27, 1918, when on a low-flying patrol his machine was attacked by eight enemy triplanes.

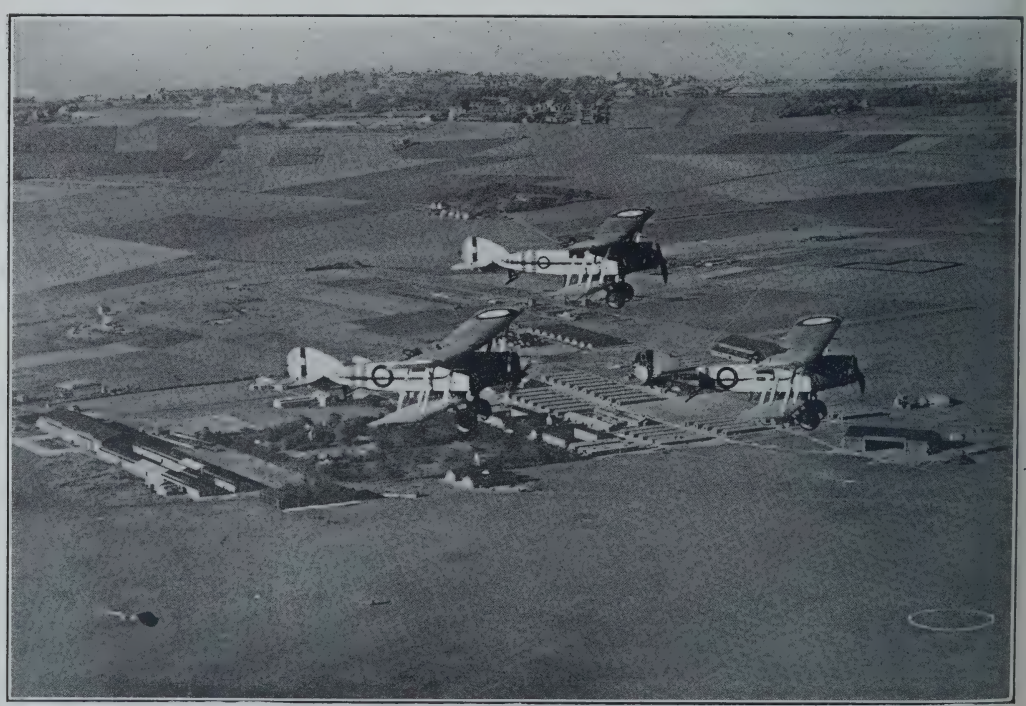
The Squadron again co-operated in a daylight raid with the 33rd Infantry Brigade on Apr. 2, 1918, when five machines dropped over 15 hundredweight of bombs on enemy battalion H.Q. and other targets, and fired 1,000 rounds into enemy trenches.

In August, 1918, Major P. G. Ross-Hume took over the Squadron from Major Snow and remained in command until it was reduced to cadre in February, 1919.

The Squadron re-formed early in 1920, and became part of the Irish Command, R.A.F. It was equipped with Bristol Fighters.

In February, 1922, the Squadron moved to Digby, and from there to Aldergrove in Ulster. Two flights returned to England in September, 1922, and went to Farnborough, where they were joined by the remaining flight in February, 1923.

No. 2 (Army Co-operation) Squadron, R.A.F., is now stationed at Manston, Kent, and is under the command of Sq. Ldr. R. E. Saul, D.F.C., R.A.F.



NO. 2 SQUADRON AT HOME.—A flight of No. 2 Squadron over Manston Aerodrome, with Margate and Cliftonville in the background. The wartime markings of the machines may be observed.

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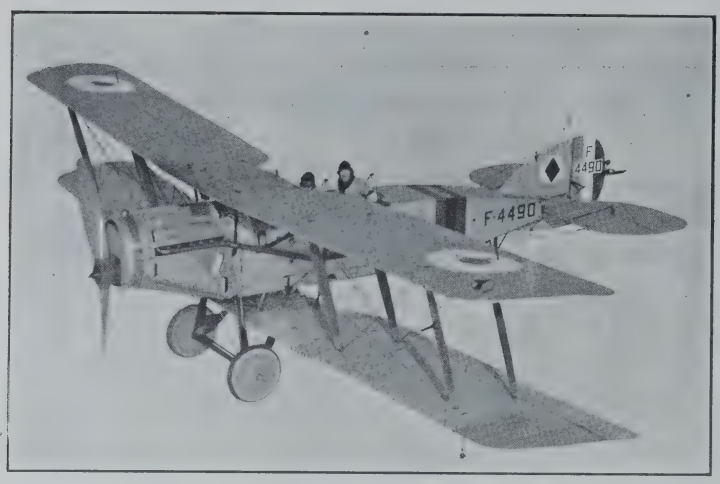
SEVEN YEARS AGO	Rolls-Royce Aero Engines in a Handley-Page Aeroplane flew from ENGLAND to INDIA (Karachi), (5,556 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew the NORTH ATLANTIC (1,890 miles non-stop).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to AUSTRALIA (11,500 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to SOUTH AFRICA (6,281 miles).
FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

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"FOR TO SEE AND FOR TO ADMIRE."—A Bristol Fighter and its crew of No. 2 (Army Co-operation) Squadron, R.A.F.

The Squadron markings shown on the fuselage of the machine are the same as those used during the War 1914-18 and are still in use.

The coloured band round the fuselage is the flight marking, red outside and white, yellow, or blue in the middle according to the flight. The diamond (or Bass label) on the fin pertained to one flight which had a diamond, a heart, a club and a spade on its respective machines—but these whims have now been abolished.

AIR AFFAIRS IN PARLIAMENT.

IMPERIAL AIRWAYS AND THE STATE OF EMERGENCY.

In the House of Commons on May 20 in reply to a question by Sir H. Brittain, the Under-Secretary of State for Air, said that the total number of miles flown by machines under Imperial Airways during the period of the strike was 41,500 miles. They had carried 944 passengers and 70 tons of freight, including goods, mails and passengers' luggage. No accidents of any kind had occurred

THE R.A.F. AND THE STATE OF EMERGENCY

In the House of Commons on May 20, in reply to a question by Lieut.-Cmdr. Kenworthy, the Secretary of State for Air said that approximately 80,000 miles had been flown by aeroplanes in the Royal Air Force during the recent general strike. Two aircraft had sustained damage in forced landings and the pilot of one had been slightly injured. Approximately 45 tons of mails and goods had been carried and also some passengers, the exact number was not yet known.

FRENCH PROPAGANDIST FLIGHTS.

The French Under-Secretary of State for Air has announced the programme for a number of long distance flights to be undertaken this summer by French pilots as propaganda for French Aviation.

Capt. Pelletier Doisy will attempt to fly from Paris to Tokyo, via Russia, on a Potez XXV biplane (450 h.p. Lorraine-Diétrich engine).

Capt. Arrachart, Commandant Vuillemin and Capt. Girier will make three distinct attempts on the world's record for distance covered in a straight line on a Potez XXV (500 h.p. Renault engine), a Breguet XIX (480 h.p. Renault engine) and a Breguet XIX (450 h.p. Hispano-Suiza engine respectively.

Lieut. Thoret will attempt to fly from Paris to Turin—Milan—Lausanne—Zurich and Paris on an Albert-Tellier light aeroplane fitted with a 40 h.p. Salmson engine.

Commandant Hirschauer will attempt a tour round the Mediterranean on a Morane monoplane (150 h.p. Salmson engine).

The brothers de Vitrolles will attempt to fly from Paris to Oslo, Stockholm, Copenhagen and Paris.

Commandant Weiss will fly from Paris to Oslo, Stockholm, Helsingsfors, Riga, Warsaw, Bucharest, Belgrade and Paris.

Two attempts will be made to fly to Madagascar, one on a land machine across the Sahara, and the other on a seaplane via the North-West coast of Africa to Dakar and thence across the African Continent by way of the Congo river.

[The Air Ministry and Air Staff are invited to consider French methods of showing the Tricolor.—C. G. G.]

THE MILAN AERO SHOW.

A very successful aero-show was opened at Milan in the last week of April. Though nominally international the only foreign exhibitors appear to have been the Lorraine-Dietrich and Renault firms, who showed their well-known engines.

There was an excellent exhibit of Italian aircraft and engines. The Fiat firm showed their B.R.1 and C.R.1 military aircraft and the new series of Fiat "A" type engines. These are all of the twelve-cylinder 60° V type, modelled very largely upon the recent American light-weight engines, and comprise the A.20 of 410 h.p., the A.22 of 525 h.p., and the A.25 of 900 h.p.

The Isotta-Fraschini exhibit covered the whole range of this firm's engines from the War-time V.6 (250 h.p.) to their most recent product, the Asso, a 500 h.p. water-cooled 12-cylinder V, also evidently inspired by recent American designs.

The Société Ing. Nicolas Romeo exhibited the 420 h.p. Jupiter engine, which they now make under license to the Bristol Company.

The Société Macchi showed the 25 h.p. M.16 light aeroplane, the M.33, a single-seat boat of very high speed (the Schneider Trophy type), and the passenger cabin of a 12-seater commercial boat designed for the Jupiter engine.

The Caproni firm showed their No. 73 twin-engine bomber transformed into a passenger-carrier.

The Société Piaggio showed two school machines and the Cantiero de Marina de Pisa, which is allied to Piaggio's, showed models of various Dornier designs, all of them well known.

SOME NEW DOUGLAS AIRCRAFT.

The attached photographs show three of the latest types of aircraft produced by the Douglas Company of Santa Monica, California, a company which has been responsible for



THE DOUGLAS O-2.—A three-quarter front view of the new two-seater reconnaissance biplane adopted by the U.S. Army Air Service to replace the D.H.4B. Its top speed with full military load of 1,790 lbs. is 140 m.p.h. The climb from ground level is 1,100 feet per minute and the ceiling is 17,000 feet with the Liberty engine.





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THE DOUGLAS C.1.—A three-quarter front view of the Douglas Transport Biplane now being used by the U.S. Army Air Service for miscellaneous transport purposes, notably for ferrying pilots from one part of the country to another. The cabin has accommodation for six passengers.

most of the early torpedo-carrier development work for the U.S. Navy. Later, the company leapt into world-wide fame as the producers of the World-Cruisers used by the U.S. Army's "Round the World" Expedition.

The Douglas O-2 is the type of machine chosen by the U.S. Army to replace the D.H.4B. as the standard two-seater observation machine of the Army Air Service. Seventy-five machines of this type have been built and thirty-nine are to be completed before Sept. 30, 1926.

In addition a number of experimental adaptations of this machine have been made, including night-flying and ground-attack aircraft. A number of different engines have been fitted, including the 600 h.p. Packard, the inverted Packard, the air-cooled inverted Liberty, and the Curtiss R.1464 radial air-cooled engine

Complete performance figures extracted from the Lampert Report were published in THE AEROPLANE recently.

The Douglas C.1 has been adopted as the standard cargo and troop transport aircraft of the U.S. Army Air Service. Ten have been delivered and seven more are on order.

In general arrangement it resembles the O-2 except that a cabin for six passengers is installed under the centre section, with the pilot's cockpit in advance of the cabin and immediately behind the engine.

The cabin has a clear cross-sectional size of 46 inches wide by 50 inches high, and is about ten feet long. The six seats are easily removable to allow for the stowage of freight, and in the floor of the cabin is a hoist hole through which bulky objects such as spare aero engines may be lifted. A Tee rail may be mounted in the roof of the cabin for use in transferring heavy weights forward to the centre of the compartment after being hoisted inside the fuselage.

The C.1 has been used largely in connection with the delivery of the Douglas O-2s. With the exception of the test and experimental models, every O-2 has been delivered to its respective destination by air. The C-1s have ferried batche of pilots to Santa Monica, thus saving unnecessary expens and delay in despatching pilots right across the Unite States by train. At the same time this method avoids th possibility of damage and delay of the aircaft under America railway transport conditions and enables the aircraft to g straight into service from the manufacturer's plant witho dismantling and re-erection.

The Douglas M-2 mailplane is similarly a development o the O-2. Six of this type have been purchased by the Wes ern Air Express Company for use on the Los Angeles, Cal fornia, and Salt Lake City, Utah, air mail route, and te are being built for the U.S. Post Office Department for us on the Transcontinental Air Mail Service.

Like the O-2 and the C.1, the M-2 has a welded steel tub fuselage, wood wings, and split undercarriage. It is fitte with the 400 h.p. Liberty engine.

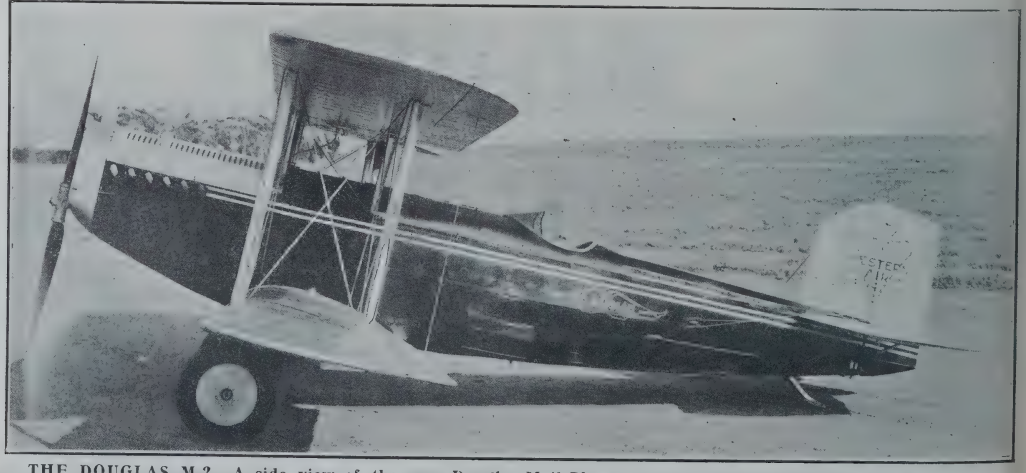
The mail compartment, of 58 cub. ft., has capacity fo 1,000 lbs. of mail, and is located in the fuselage ahead of th pilot's cockpit. It is lined with reinforced duralumin, ensu ing safety from fire. The total length of the compartmen is six feet, which permits of the stowage of long packages.

The compartment is further provided with two removabl seats, thus permitting the carrying of two passengers or c ferrying reserve pilots from one aerodrome to another.

Sufficient petrol is carried for a distance of 650 miles.

SPECIFICATION.

Span	39 ft. 8 in.	Weight empty	2,910 lb
Length	28 ft. 11 in.	Useful load	2,058 lb
Height	10 ft. 6 in.	Weight loaded	4,968 lb
Wing area	500 sq. ft.	Speed maximum,	145 m.p.h
Wing loading, 12 lb. per sq. ft.		Speed landing	55 m.p.h
Power loading, 11.8 lb. per h.p.		Ceiling	17,000 ft



THE DOUGLAS M-2.—A side view of the new Douglas Mail Plane used by the Post Office Department and also by the Western Air Express Company. With 1,000 lbs. of mail the top speed is 145 m.p.h.



Looping photographs by courtesy of "Flight."

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THE FLYING CLUBS.

The London Aeroplane Club.

Flying was resumed on Thursday, May 20. For the four days, May 20 to 23, the flying time was 27 hrs. 40 mins.

The following members had flying instruction :—G. Quirk, T. H. O. Richardson, G. Black, K. V. Wright, G. Lyon, C. E. Murrell, G. H. Weston, G. Wallcousins, A. Lees, Sir John Rhodes, E. D. Moss, O. J. Marstrand, W. Hay, J. C. Parkinson, B. B. Tucker, Mrs. Lees, A. Lees, L. J. C. Mitchell, Miss O'Brien, D. P. H. Esler, R. C. Presland, R. Malcolm, Mrs. Eliott-Lynn.

The following members made solo flights :—A. R. Ogston, G. H. Craig, L. J. C. Mitchell, J. S. M. Michie, G. N Warwick, G. Wallcousins, A. Lees, Sir John Rhodes, H. Kennedy, E. S. Brough, W. Hay, A. P. Hunt, W. Roche Kelly, Mrs. Eliott-Lynn.

The Newcastle-upon-Tyne Aero Club.

Report for week ending May 9 :—

Though this was an unsettled week as far as training was concerned, it was an important week from a general flying point of view.

The total for G-EBLX (*Novocastria*) was 28 hrs. 45 mins. and LY (*Bernicia*) 13 hrs. 25 mins. Total 42 hrs. 10 mins.

This was made up as follows :—Dual Instruction under Major Packman 7 hrs. 45 mins., Passenger 15, Solo Flying 4 hrs. 20 mins., one Test 10 mins., Newspapers and one passenger flight 29 hrs. 40 mins.

The following members flew under instruction :—Mrs. Marcks, Col. Sir Joseph Reed, Mr. MacMillan, Mr. Miesegaes, Mr. Bruce. Mr. Richardson flew as passenger.

On the first day of the Industrial Crisis copies of *The Newcastle Evening Chronicle* were distributed from a Club machine when Mr. Ellis, piloted by Major Packman on LY, dropped small quantities of the paper into the villages surrounding the city. This was repeated on the second day (May 5). It was reported that it was very amusing to see practically the whole village turn out and run towards the area where the papers were falling, in order to obtain news of developments.

Leaving the aerodrome at an early hour on May 5 Major Packman took Mr. Mark Fenwick to his home near Coventry, flying on LX, making the trip from Newcastle to Coventry in 2 hrs. 45 mins. Mr. Fenwick has advised the Club that he had a very comfortable journey, and it must certainly have been quicker and safer than if it had been done by road.

On returning from this trip, Major Packman piloted Mr. Ellis on the newspaper distributing flight and then took up Mrs. Marcks and Mr. Miesegaes each for 30 mins.' instruction. Truly a very good day's work.

On Friday, May 7, Major Packman flew to London with a full load of copies of *The North Mail and Newcastle Chronicle*, this being, it is understood, the only paper on sale in London on that day. One copy of it was purchased by the Prime Minister and others by Mr. Winston Churchill and several thousands of Londoners.

We have no report of coals being brought to Newcastle during the strike, but papers certainly went in large quantities to London. Which, apart from that distinction and the important part which the distribution of reliable reports of conditions throughout the country by means of the papers played, makes *The Newcastle Chronicle Ltd.* and The Newcastle Aero Club feel very proud of their achievements.

Both machines were booked to carry newspapers on Sunday, May 9, Mr. Baxter Ellis and Major Packman being the pilots. The journey from Cramlington to London took exactly three hours and the return journey three and a-half hours.

Report for week ending May 16 :—

The early part of the week was mainly employed in the delivery of newspapers and running the gauntlet through the mining areas between the city and the aerodrome, as by this time the duties of the red-bodied aeroplanes had become known. Beginning on Monday, members and staff, armed to the teeth with revolvers and borrowed Very light pistols, guarded the Club machines and those of Imperial Airways, who had by this time entered into the newspaper carrying business, from Cramlington.

Flying times were :—LX 19.40, LY 22.30, total 42 hrs. 10 mins. (It is quite a coincidence that the total time was the same as for the previous week.)

Dual Instruction under Major Packman 15 hrs. 35 mins, Solo Flying 8 hrs., Test 5 mins., Passenger flying 1 hr., Newspapers 17 hrs. 30 mins.

Members who flew under instruction were :—Dr. Dixon and Col. Sir Joseph Reed, Mrs. Marcks, Miss Leathart, Messrs. Miesegaes, Bainbridge, Stewart, C. Thomson, Bruce, Campbell, Thirlwell, J. Bell, J. G. Edmundson, MacMillan.

Mr. Macmillan also put in a lot of solo flying, and on Saturday, May 15, completed his tests for the R.Ae.C. Certificate in excellent style. Everyone is pleased that Mr. MacMillan has got through his course as he has been all along unfortunate in the weather and it has become accepted that when he is coming to Newcastle bad weather may be expected. He has persevered, however, having made the journey almost weekly from his home in Galloway, Scotland.

The following pilot members flew with passengers :— Mr. Baxter Ellis, passengers Councillor W. B. Ellis, Mrs. Wallace; Mr. P. Forsyth Heppell, passengers Capt. J. H. Boyd, Mrs. Heppell; Mr. R. N. Thompson, passengers Mr. Clarke, Mr. Lawson, Mr. McCullagh; Mr. N. S. Todd, passengers Mr. Maden Mr. Phillips, Mr. Chamberlain.

Major Packman flew with the following as passengers :—Mr. Ma Kenzie, Miss Reed and Mr. Gilmore.

The last trip to London carrying newspapers was by Mr. Heppe and Major Packman on Tuesday, May 11, when again excellent tim was made on the journey down. One Imperial Airways' machi landed at the aerodrome on Monday night and also carried a co signment of papers.

Mr. Goodfellow brought a cargo of copies of *The Daily Ma* on Tuesday morning, on the Lancashire Moth, G-EBLV, landi and unloading at Cramlington. Mr. Stack brought a further car on Wednesday.

Apart from financial considerations, this work has brought mu prestige and a greater realisation of the importance of aircraft amo the people of the district. It must be an ill wind that blov no good.

Report for week ending May 23 :—

Flying on LX 24 hrs. 25 mins., LY 19 hrs. 20 mins., total 43 hr 45 mins., made up as follows :—

Dual 27 hrs. 20 mins., Solo 13 hrs. 15 mins., Passenger, with Maj Packman, 2 hrs. 20 mins., Tests 50 mins.

The following members flew under instruction (with Major Pac man) :—Miss J. Ellis, Col. Sir Joseph Reed, Messrs. M. Bainbridg F. H. Phillips, R. Miesegaes, C. Thompson, T. R. MacMillan, W. Harrison, T. E. M. Wardill, L. Smith, J. Stewart, M. G. Thirlwel J. M. Campbell, J. Bell, J. G. Edmundson.

Solo, T. R. MacMillan, R. Miesegaes.

The following pilot members flew with passengers :—Mr. R. Thompson, with Miss Scott, Miss Snowball, Mr. Maden, and M Thirlwell. Mr. N. S. Todd, with Miss Little, and Mr. Chamberlai Mr. P. Forsyth Heppel, with Capt Gibbs, Mr. N. Easey, Mr. Nicho son, Mr. H. Ellis, Mr. W. Baxter Ellis, with Mr. N. Easey, Mr. F. Phillips.

Passengers with Major Packman :—Miss Betty Reed, Mrs. W. Harrison, Mr. Alderson.

On Wednesday, Sir Joseph Reed had instruction, under Maj Packman, in cross-country flying, flying to Tamworth and back, th total flying time being 6¼ hrs.

Mr. R. Miesegaes was sent off solo on Tuesday, May 18, putting a splendid performance, and on Sunday Mr. C. Thompson made h first solo effort, also in splendid style.

Mr. Ellis, Mr. Heppell and Major Packman flew the Gull on sever occasions, the total time flown being two hours.

PARIS—TOKYO.

On May 24, Lieut. Boleslas Orlinski and Sjt. Leonar Kubiak, of the Polish Army, left Villacoublay at 03.00 hour in an attempt to fly to Tokyo on a Potez XXV biplane (48 h.p. Renault engine).

The route to be followed will be via Moscow, Kazan Omsk, Krasnoiarsk, Chita, Heidjo and Tokyo; a total dis tance of approximately 7,000 miles.

NEW YORK—BUENOS AIRES.

On May 24, Señor B. Duggan, an Argentine sportsman Capt. E. Oliveiro and Lieut. Campanelli, late of the Italia Regia Aeronautica, the latter having been mechanic to th Marchese di Pinedo on his recent flight from Rome t Tokyo and back, were to have left Miller Field, N.Y., in a attempt to fly to Buenos Aires.

They will use a Savoia 16 (450 h.p. Lorraine-Diétrich en gine) and will fly via the east coast of North America, th West Indian archipelego and the east coast of South America a total distance of 5,290 miles.

A PORTUGUESE SEAPLANE EFFORT.

On Apr. 20, two Portuguese Naval aviators, Flight-Lieuts Moreira Campos and Neves Ferreira, left Lisbon on a Fokke seaplane with the intention of flying to Madeira (1st day) Madeira—Azores—Madeira (2nd day), and Madeira—Lisbo (3rd day). They carried no wireless, and it was their in tention to fly a few feet above the surface of the sea in orde to utilise the ordinary sextant as used by ships, which can not be used at height.

Early in the morning of the 21st, they were picked up b a fishing vessel about 25 kms. north of the Island of Port Santo (a small island at the north end of the Madeira group) The cause of their descent was a faulty water connection This was subsequently patched up and they proceeded t Funchal on the 22nd.

WIRELESS AT THE NORTH POLE.

Reports from the Amundsen-Ellsworth expedition show that th Marconi wireless apparatus on board the airship *Norge* proved of th greatest value to the expedition during the flight from Spitzberge over the North Pole to Alaska. Weather reports were constantly re ceived from many stations, and the direction-finder again proved it high value to a long-distance flying expedition, as it did during th flight of the Spanish aeroplane "Plus Ultra" to South America earlie this year.

MARCONI WIRELESS APPARATUS

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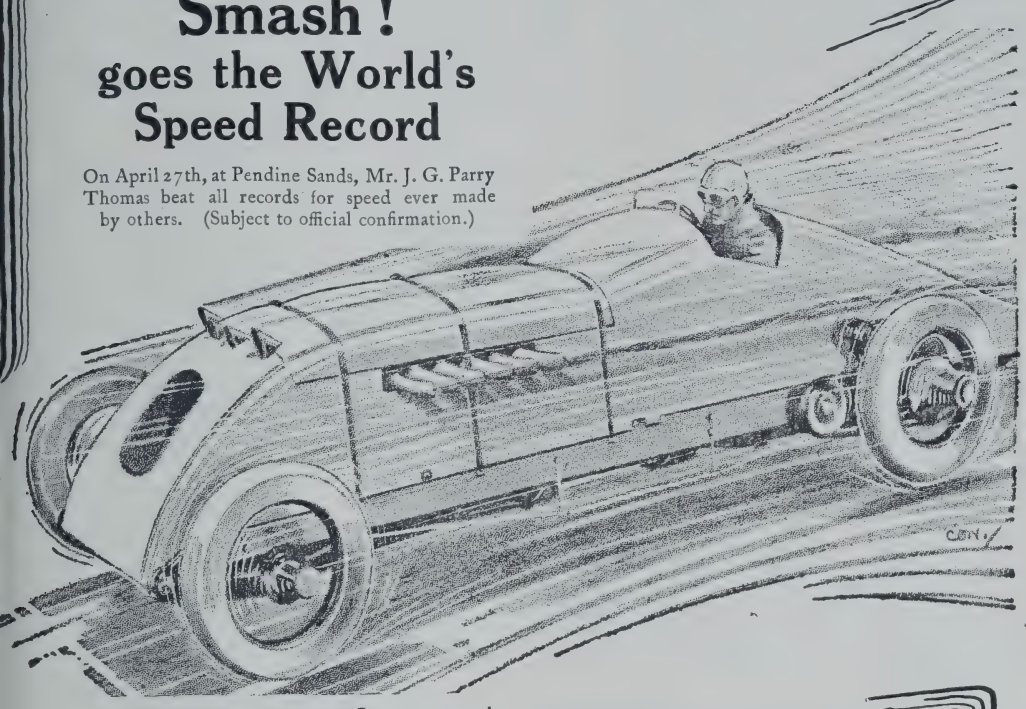
The Marconi installation carried by Major Franco on his flight from Spain to South America has proved the value of wireless direction finding equipment to an expedition of this kind and has established the direction finder as a necessary addition to the equipment of aircraft flying over long distances.

The airship of the Amundsen-Ellsworth expedition to the North Pole is also fitted with Marconi telegraph and direction finding equipment.

MARCONI'S WIRELESS TELEGRAPH CO., LTD., MARCONI HOUSE, LONDON, W.C.2.

Smash!
goes the World's Speed Record

On April 27th, at Pendine Sands, Mr. J. G. Parry Thomas beat all records for speed ever made by others. (Subject to official confirmation.)



168.074 m.p.h. on Shell Racing Spirit and Shell Motor Oil

160.349 m.p.h. on Shell Motor Oil and Shell Petrol
ordinary grades from public garages

Hitherto it has been assumed that racing cars had to have special oils and fuels to stand up under the terrific strain of miles-per-minute.

Mr. Thomas broke, however, all records ever made by others, when using *nothing but* the normal grades of Shell Motor Oil and Shell Petrol—exactly the same as offered everywhere to the public.

Petrol and lubricant were obtained in the open market from garages under the supervision of the R.A.C., whose official observer saw them poured into the car and sealed there.

Thus a precedent was smashed as well as a record.

The identical petrol and oil that Mr. Thomas used are available everywhere from the sealed Shell pump and the branded Shell Oil cabinet.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 20; Tuesday, 19; Wednesday, 24; Thursday, 19; Friday, 24; Saturday, 23; Sunday, 7.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 66, passengers 412, freight 24 tons.

AIR UNION:
Paris—London: Machines 39, passengers 164, freight 12 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 14, passengers 36, freight 2¼ tons.

SABENA:
Brussels—London: Machines 12, passengers 26.

DEUTSCHE LUFTHANSA A.G.:
Berlin—London: Machines 1, passengers 2.

SPECIAL:
De Havilland Aircraft Co. Ltd.: Machines 2, passengers 2.

Total number of trips by British Machines, 70, carrying 416 passengers. Foreign Machines, 66, carrying 208 passengers.

Week ending May 23:
Machines, 136; Passengers, 624; Crews, 174; Total personnel, 798.
Corresponding week, 1925:
Machines, 127; Passengers, 493; Crews, 152; Total personnel, 645.
Corresponding week, 1924:
Machines, 81; Passengers, 271; Crews, 130; Total personnel, 401.
Corresponding week, 1923:
Machines, 105; Passengers, 353; Crews, 175; Total personnel, 528.
Corresponding week, 1922:
Machines, 162; Passengers, 337; Crews, 198; Total personnel, 532.
Corresponding week, 1921:
Machines, 89; Passengers, 350; Crews, 106; Total personnel, 456.
Corresponding week, 1920:
Machines, 91; Passengers, 138; Crews, 98; Total personnel, 236.

Croydon Notes.

The chief event of importance during the week was the arrival of the Bleriot 135 (four 230 h.p. Renaults). This machine is an improved version of the 115 which ran for some time on the service in 1924 and is chiefly famous for the prize error by *The Evening News*, which paper made it fly from Paris to London in 45 minutes. The joke was on *The Evening News* which had omitted to remember that while Summer Time was prevailing in England, it was not so in France and so the real duration of the journey was 1 hr. 45 minutes.

The new machine was brought over by M. Bajac, and it is understood that it will go regularly on the service.

Here is a true story. One of the best and most able pilots of Imperial Airways Ltd. recently went to stay with some relatives whose knowledge of aviation was derived from the newspapers. The said relatives had recently seen an obscure paragraph in one of the papers chronicling an exceptionally noteworthy flight by the said pilot. The relatives thereupon in all seriousness said to the pilot, "We've been reading about you in the papers. You *are* doing well. You'll soon be as good as Cobham!" The said pilot is bearing up wonderfully well.

Imperial Airways Ltd. are doing remarkable business. Every machine which goes out or comes in is absolutely full of passengers and goods, and it looks as though there will be a shortage of accommodation again this year even with the present increased fleet.

One gathers that the first Armstrong Argosy is performing extremely well and it is expected that it will put in an appearance at Croydon shortly. It is a large biplane capable of carrying 20 passengers and their luggage. It has a very slow landing speed and a good cruising speed.

At the works of A.D.C. Aircraft Ltd. the Boreas (Martinsyde-Nimbus) is putting up an astounding performance. Its climb is one of the most spectacular sights yet seen.

The new terminal buildings are rapidly growing, and the skeleton of an enormous hangar towers above all the other embryo buildings. As the entrance will be on the new Brighton Road, which is one of the new broad arterial roads, the aerodrome will be much more accessible than previously. —G. D. [Provided always that one does not crash before getting there,—the new road being, if anything, a trifle more dangerous than the rest of these official death-traps.—C. G. G.]

Brooklands Notes.

It was very regrettable that the Private Aircraft Owners Club meeting arranged for the 24th had to be cancelled, but nevertheless Dr. Whitehead-Reid's S.E.5a, Mr. Kittel's Moth, Mr. Preston's B.E.2E., Mr. Henderson's Renault-Avro, and Mr. Dudley Watt's Sopwith Grasshopper were all to be seen at Brooklands. A short display of flying was given by some private owners before the last race. During the month the Southern Counties Aviation Co. have been busy delivering papers during the strike on their Avros. Mr. Watt had the misfortune to have his Sopwith Swallow damaged while being taxied into its shed. Mr. Cobb's Avro is undergoing repair. Mr. Preston's B.E.2E has been sold to Mr. Carr, Royal Air Force. Mr. Hamilton has had the misfortune to lose his Vulcan in the sea off Nice.

Cambridge.

During the Whitsun holidays, the two Avros of the Southern Counties Aviation Co., piloted by Messrs. R. Leavey and H. Lawson, carried 1,260 passengers and enormous crowds flocked through the turnstiles to watch the wing-walking exhibitions and the flying generally.

Berkshire Progress.

The Berkshire Aviation Tours seem to go on making progress in spite of strikes and everything. During the week-end May 8-9-10 they did quite well at Mexborough, in the middle of the colliery district, and at Basingstoke and Alton. Between the two places they managed to take up 400 passengers. At Mexborough they had to let the colliers onto the ground free to see the show, presumably because there were too many colliers for the gatekeeper to keep them out. But at Basingstoke and Alton 3,000 people paid to get onto the ground and see the show, which was put up by the firm's Avros reinforced by a Moth and a D.H.53. The staff of the Berkshire firm has been increased by taking on Mr. J. Stirling. If he turns out to be as successful as Mr. Parkinson and Mr. Kent are in taking up quantities of passengers without crashes he will be a valuable propagandist for Civil Aviation.

The South African Junkers Scheme.

According to *The Cape Argus* the South African-Junkers commercial air line scheme has collapsed. The promoters were given until Apr. 12 to form a South African operating company and to secure bank guarantees. An application for an extension of the time limit was made to the Minister of Posts and Telegraphs but was refused.

New tenders will be invited, but it is not expected that there will be many applications for a Governmentally-assisted scheme which offers an annual subsidy of only £8,000. The money would not pay for the consequent interference.

A Visit to the N.P.L.

On Wednesday, May 19, the Institution of Aeronautical Engineers paid their annual visit to the Aerodynamics Department of the National Physical Laboratory, where many things of interest were shown.

Probably the most interesting objects were certain models of the fuselages of high speed racing craft designed for competition in this year's Schneider Trophy Contest. These machines will not compete in this year's event, but some of them will nevertheless be built, and it is comforting to learn that the tests made on these models at the N.P.L. go far to confirm the designers' estimates of the high speed which will be attained by the machines when completed.

The Cherub in Germany.

Readers will remember that in September last a monoplane entered by Dipl. Ing. Willy Messerschmitt and fitted with a Bristol Cherub engine won all the first prizes for speed and climb at the International Flying Meeting at Munich. In a letter dated May 3 received by the Bristol Company from Herr Messerschmitt, he says:—

I am very pleased with the first Cherub engine which you supplied to me, and it is to-day still running like clockwork. The aircraft is in the possession of the Furth Sportflug and it has had no respite.

Undoubtedly the good service reported of this engine is striking testimony to the reliability and efficiency of the Bristol Cherub. It is well to remember that the engine in question is one of the early type Cherubs and that the latest, the Cherub III, has been modified and improved in many details.

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SHEEP.

Following a lock-out at the Renault works at Billancourt, near Paris, which affects 25,000 men engaged in aero-engine and automobile manufacture, the Salmson and Farman employees at Billancourt have come out in sympathy.

CELLON AS USUAL.

Not a single man went on strike in the Cellon Works, where Dope production was as high as at the offices of *The British Gazette* and *The British Worker*.

The firm's own lorries delivered the goods all over England and the export work was handled by the French branch.

The production of Cellon and Cerric is now as big as at any time in the history of aviation.

NEW COMPANIES.

AIRSHIP CLUBS LTD. was registered as a "private" company on Apr. 26, with a nominal capital of £100 in £1 shares. The objects are to promote, assist and encourage aerial navigation in all its forms, the study of aeronautics, the development of all sciences connected therewith, and the construction of aerial conveyances of all kinds, to establish and maintain a club to be known as the Airship Club, etc.

The subscribers (each with one share) are:—G. Brewer, 33, Chancery Lane, W.C.2, patent agent. F. L. M. Boothby, Ovenwey, Tilford, Surrey, Commander, R.N. (retired). Lt.-Col. W. Lockwood Marsh, Hockering, Woking, late R.A.F. Cunliffe, 12, Austin Friars, E.C., banker. A. F. de Moleyns, 26, Evelyn Gardens, S.W.7, late Irish Guards and R.A.F. The first and all subsequent directors are to be appointed by the Committee of the Royal Aero Club.

The registered office is at 3, Clifford Street, Bond Street, W.1.

MORTGAGES AND CHARGES.

C. G. SPENCER AND SONS LTD.—Mortgage on moneys due or to become due under a certain contract, dated Mar. 11, 1926, to secure all moneys due or to become due from the company to Barclays Bank Ltd. (Rgd. Apr. 23, by permission of the Court.)

PERSONAL NOTICES.

DEATHS

BROADWAY.—On May 14, at Upper Caterham, in a flying accident, Basil Douglas John Broadway, Flg. Off., No. 32 Sqdn., R.A.F.

Mr. Broadway was educated at Marlborough and the R.A.F. Cadet College, Cranwell. He passed out at Cranwell on Aug. 15, 1923, having attained the rank of Flt. Cadet Sjt. and won the Groves' Memorial Prize for the best all-round pilot in the Senior Term. He was posted to the C.F.S. direct from Cranwell and from there to No. 32 (Fighter) Sqdn., Kenley, on Feb. 7, 1924. He was promoted to the rank of Flg. Off. in February, 1925. In February and March of this year he was at the Armament and Gunnery School, Eastchurch.

Mr. Broadway had two narrow escapes in September, 1924, as he was the pilot in the machine which made a forced landing and caught fire while taking part in the 1924 Tattoo at Wembley. A few days later he was flying to take part in No. 32 Sqdn.'s formation for the Air League Challenge Cup at Lympne when his machine hit some telegraph wires and was written off. Mr. Broadway flew the race itself in another machine. Mr. Broadway was a fine athlete and played Rugy football and hockey for Cranwell. He was also a member of the Cranwell Skill-at-Arms team.

COX.—On May 17, at Andover, as the result of a flying accident, L-AC. Sydney Marsh Cox, R.A.F.

HAWKINS.—On May 17, at Andover, as the result of a flying accident, Sjt. Ralph England Hawkins, R.A.F.

SMITH.—On May 21, at Dundee, the result of a flying accident at Leuchars, Fife, Lieut. Peter Granville Smith, R.N., attached R.A.F., only son of the late Commander Herbert Granville Smith, R.N., and stepson of Captain R. F. Parker, C.B., C.M.G., R.N., age 23.

Lieutenant P. G. Smith was detached from the Navy for service with the R.A.F. on Apr. 27, 1925. After a course of instruction at No. 1 F.T.S., Netheravon, he was posted to the R.A.F. Training Base, Leuchars.

YOUNG.—On May 14, at Hinaidi, Iraq, as the result of a flying accident, Stuart Adolphus Young, Flg. Off., No. 1 (Fighter) Sqdn., R.A.F.

Mr. Young entered the R.A.F. with a S.S. comn. on Mar. 15, 1923, and was posted to No. 5 F.T.S., Shotwick, for a course of instruction. In April, 1924, he was posted to No. 17 (Fighter) Sqdn., Hawkinge, and in September, 1924, to No. 1 Sqdn., Hinaidi He was promoted to the rank of Flg. Off. in November, 1924.

FORTHCOMING MARRIAGES.

COURTNEY—GREENSILL.—The engagement is announced between Group Captain Christopher L. Courtney, C.B.E., D.S.O., R.A.F., youngest son of Mr. W. L. Courtney, M.A., LL.D., and Constance (Mickie) Rayson, elder daughter of Mr. G. Edward Greensill, of H.M. Office of Works and Cannock, Staffs.

WHITE—HICKMAN.—The marriage between Flt. Lt. Hugh G. White, R.A.F., and Miss Joy Hickman will take place at Christ Church, Blacklands, Hastings, on June 1.

BIRTHS.

ANDERSON.—On May 20, at 12, Mornington Road, London, N.W.1, to Marie, wife of Corporal R. Anderson, R.A.F., Halton—a daughter.

COCHRAN-PATRICK.—On May 5, at 7, Ormonde Terrace, St. John's Wood, to Natalie, wife of Major C. K. Cochran-Patrick, D.S.O., M.C.—a son

FARRINGTON.—On May 3, at Queen's Road, Wimbledon, to Ida, wife of Flg. Off. F. C. Farrington, R.A.F.—a son

KYLE.—On May 3, at Grey Lodge, Woodcote Grove, Coulsdon, Surrey, to Stella, wife of Sq. Ldr. J. Kyle, R.A.F. Medical Service—a daughter

NICHOLLS.—On May 17, at 80, Drayton Gardens, S.W., Mary (*née* Fairholme), wife of W. Graham Nicholls, R.A.F.—a son.

SOWREY.—On May 10, at Westcliff-on-Sea, to Daisy, wife of Sq. Ldr. W. Sowrey, D.F.C., A.F.C., R.A.F.—a daughter (Heather Standish).

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Edited by C. Grey

Vol. XXX. No. 22. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

JUN 2nd 1926 UNIVERSITY

"WHERE BURNING SAPPHO LOVED AND SUNG,
WHERE GREW THE ARTS OF WAR AND PEACE——"

(Byron.)



ANGLO-GREEK.—Here is seen the first Velos seaplane (Napier Lion engine), constructed at the Greek Aircraft Factory, organised and operated by the Blackburn Aeroplane and Motor Co., Ltd., at Phaleron, near Athens, taking off on its first test flight, piloted by Col. the Master of Sempill.

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SEE PAGE 541 FOR PALMER LANDING WHEELS AND TYRES (226)

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JUNE 2. 1926.

THE AEROPLANE

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VOL. XXX. No. 22.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE COMING OF AGE OF THE BRITISH AIRSHIP.

In this week falls the twenty-first anniversary of the date which the first British airship successfully raised itself o the air. This particular ship was the *Willows I.* It was ilt by Mr. E. T. Willows at Cardiff during the earlier part the year and was actually launched during the first week June, 1905. Curiously enough Mr. Willows himself has record of the precise date of the month beyond the fact it it was during the first week.

Mr. Willows' accomplishment is the more noteworthy be-ase he was only 19 years of age at the time. He was born Cardiff on July 11, 1886.

The First British Airship.

The photograph which appears at the foot of this page ows the airship just lifting into the air during these first ys.

Other sausage-shaped balloons equipped with petrol motors d been made in England before that date but none of them d been able to do more than drift before the wind, and en in a calm they were not under any kind of control. oreover their makers did not produce other and successful ips thereafter.

But this little ship of Mr. Willows', although its air speed as very low, did at any rate answer its controls. Which ntrols were quaint, consisting of twin tractor swivelling rscrews forward, which towed the nose of the ship up or wn or right or left as required.

Mr. Willows used to drive it round and round the grounds which he built it near Cardiff, so that although it never d a cross-country voyage, one may fairly claim for it that was the first successful British airship.

One remarkable feature about it is the fact that Mr. illows made for it an envelope, or gas-bag, of silk, and did ot use gold-beater's skin which was the material commonly ed for balloons of the period and by Continental experi-enters with motor-driven airships, such as Señor Santos umont.

In these days when we talk glibly of rigid airships with as capacities of 5,000,000 or 6,000,000 cubic feet, 600 to 700 long, and anything between 2,000 and 5,000 horse power, is interesting to record that the *Willows I* had a capacity 12,000 cubic feet, was 74 feet long and 18 feet in diameter, nd that its power plant was a 7-9 h.p. Peugeôt motor-cycle engine.

The Next Step.

After a month's experimenting with this little ship Mr. Willows produced in July the *Willows Ia.* This was in fact the same ship with the same envelope, but the framework was extended so that the load was distributed over more of the length of the ship, with the result that the envelope did not sag in the middle as the first photograph shows it.

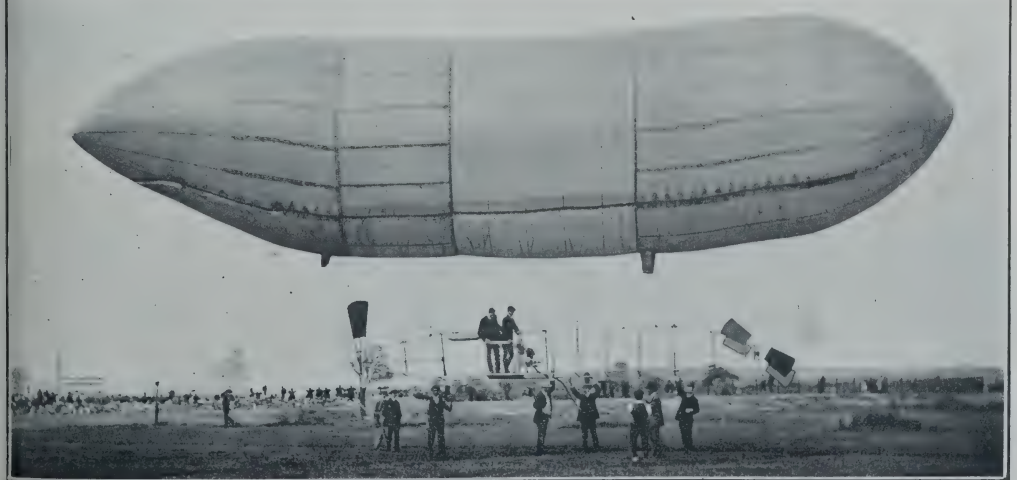
As may be guessed from the photograph, the ship was driven by one airscrew at the stern of the framework and had in addition two screws placed right at the bow of the framework driven by a very long shaft and bevel gears. These two leading airscrews were designed so that they could swivel round about a thwart-wise horizontal axis and so could either pull straight ahead or up or down as might be desired, and could pull independently to give directional steering. The airscrews thus had the effect of elevators and rudders.

The Government's First Attempts.

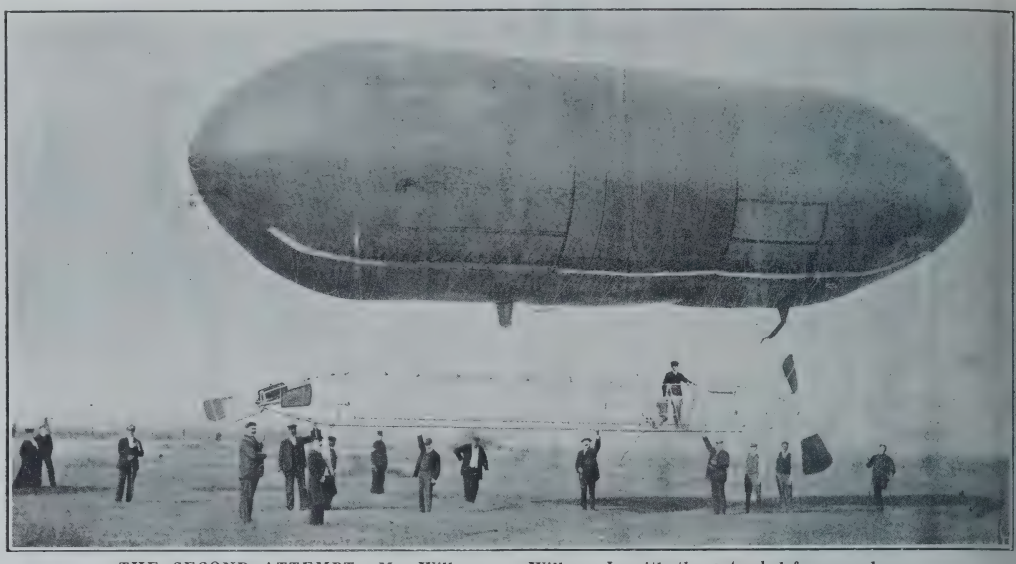
How far Mr. Willows was ahead of his competitors may be judged by the fact that it was not until 1907, two years after this ship was built, that the much-advertised Government airship, built at the Army Balloon Factory at Farnborough by the late Colonel Capper, R.E., and the late Mr. S. F. Cody, was produced. The ship was built of gold-beater's skin and perished in a gale, after having been navigated with much care and a good deal of luck from Farnborough to the Crystal Palace.

Here it is worth while noting that the ship which actually made the journey to the Crystal Palace was a modification of one which was built some few months earlier, but, nevertheless, in the year 1907. The first ship was called the *Nulli Secundus* and the modification was called the *Nulli Secundus II.* Which was accountable for *Punch's* brilliant suggestion that the first ship ought really to have been called the *Nulli Primus* and the next ship ought to have been called the *Nulli Tertius.* As a matter of fact the official *Nulli Secundus* was a very bad second to the *Willows I* and the *Willows Ia.*

It was not until April, 1910, that the Admiralty set about the production of an airship. When they did so they attempted to rival the success which had already been achieved in Germany with the rigid Zeppelin ships. The construction of the ship, which was designed by the Admiralty, was entrusted to Vickers Ltd., who built her at Barrow-in-Furness.



TWENTY-ONE YEARS AGO.—Mr. E. T. Willows and a passenger making their first ascent at Cardiff in Willows I, the first practicable British airship.



THE SECOND ATTEMPT.—Mr. Willows on Willows Ia with the extended framework.

It is interesting to note that the officers in charge of the ship while under construction were Captain Murray Sueter, R.N. (now Rear-Admiral and M.P.), Lieutenant Boothby, R.N. (now Commander Boothby, late R.N.), and Commander Oliver Schwann (now Air Vice-Marshal Sir Oliver Swann, K.C.B., C.B.E., Air Officer Commanding the Middle East).

This unfortunate ship never showed any particular inclination to get off the water on which she floated while being constructed, so naturally she was nicknamed *The Mayfly*, because she did not. She broke her back in September, 1911, by being blown against the side of her shed while being towed out for a test. And she was not re-built.

The First Cross-Country Flight.

The result of all this was that not only did Mr. Willows build the first practicable airship in England but he actually did the first real cross-country airship flight.

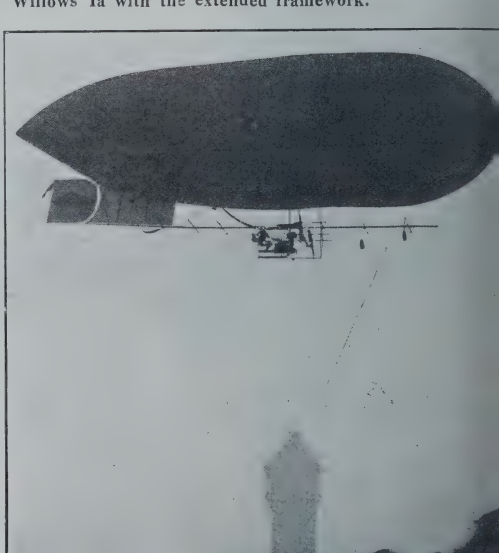
During 1909 he built *Willows II* at Cardiff. This was a ship of 20,000 cubic feet, 80 feet long by 22 feet diameter. The speed of the ship was about 17 or 18 miles an hour. At this time Mr. Willows developed the idea of the swivelling airscrews and in this ship carried them close up to the engine, pretty nearly amidships.

In June, 1910, he flew from his shed on the East Moor at Cardiff and alighted in front of the City Hall, flying back to his shed afterwards. On July 11, 1910, he flew the ship from Cardiff to Cheltenham and back. And he was the first to cross the Bristol Channel in any type of aircraft.

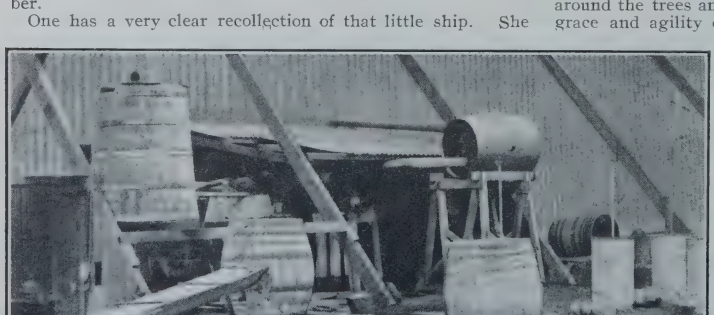
But the flight which really began to awaken this country to the possibilites of airships was his flight on Aug. 6 from Cardiff to London. He left Cardiff in the evening and deliberately flew nearly all the way in the dark, so as to avoid being troubled by the possibilities of a head or cross wind. Every now and then he came down quite close to the ground to ask his way, for, although he had a compass, the compasses of those days were not accustomed to the proximity of engines and steel framework.

However, he arrived safely at the Crystal Palace and from there he made a number of flights during August and September.

One has a very clear recollection of that little ship. She was very amenable to her controls and used to gam around the trees and towers at the Crystal Palace with all grace and agility of a performing pig.



THE FIRST CROSS-COUNTRY AIRSHIP.—Willows I at the Crystal Palace after her voyage from Cardiff t London.



PRIMITIVE APPLIANCES.—The pl with which Mr. Willows manufactu his own hydrogen from 1905 to 19 In those days hydrogen plants were and far between and it was impossi to buy compressed hydrogen in bott like "sparklets." Consequently Willows had to start in from the v beginning and make his own hydrog For ordinary balloons coal gas was c monly used, but these early Willo airships were built so close to their ing limit that coal gas would not h got them off the ground. The pict illustrates what keenness and ene can do.

"To-day the Napier aero engine is the best and the leading aviation motor in the World."

Sketch
3rd Feb., 1926

Further Proof!

THE consistent reliability and efficiency of the Napier Lion has been further demonstrated by the survey flight carried out by the Royal Air Force for the British Air Ministry.

Four Fairey machines fitted with Napier Lion engines have flown in formation from Cairo to Cape Town and back—10,578 miles.

That the flight was carried out according to programme further emphasizes the outstanding merits of the famous Napier Lion.

To be certain of success follow the lead of the British Air Ministry and select the—

NAPIER

Lion

The Finest Aero Engine in the World

D. NAPIER & SON LTD.
ACTON, LONDON, W.3.

Major Franco flew from Spain to the Argentine—6259 miles—in 59½ flying hours on Napier Lion engines.



THE START FOR FRANCE.—M E. T. Willows and the late Mr. Frar Goodden starting on Willows III for th first airship flight from England France. On the ground waving a to hat may be seen one of the Instor Brothers, later well-known as the pr prietors of the Instone Air Line, no merged in Imperial Airways Ltd.

As may be seen, the airscrews wer carried on a transverse shaft whic could be moved round its own axis s that the screws could either raise th ship or pull her down or drive hor zontally. The transverse shaft wa driven by a broad flat belt from th engine.

The rights in this mechanism wer purchased by the Royal Aircraft Factor and the system was adapted, rathe than adopted, for the small Army ai ships built at the R.A.F. at Far borough. As was the custom in thos days much credit was assumed by th Factory for this system of drive and M Willows' part in it was practicall ignored.

THE CROSS-CHANNEL SHIPS.

While *Willows II* was at the Crystal Palace Mr. Willows set to work to build *Willows III*, which was a ship of 33,000 cubic feet, 110 feet long by 24 feet diameter. Into this he put the same 35 h.p. J.A.P. engine which had been in *Willows II*, but owing to improvements in the design of the ship and the propeller arrangements he managed to get 25 m.p.h. out of her. This ship made her first appearance in August, 1910.

On Sept. 15, Mr. Willows created a sensation in London by flying from the Crystal Palace round St. Paul's and the Houses of Parliament and back.

The year ended gloriously, if rather disastrously, for on Nov. 4 Mr. Willows flew *Willows III*, which had been christened *The City of Cardiff* some years before the Instone Air Line aeroplane of that name, across the Channel to France.

This was the first crossing of the Channel by an English airship, and the first crossing from England to France by any airship. A French airship, bought by subscriptions raised by *The Morning Post*, had already flown from France to England, but that ship was wrecked shortly afterwards.

Mr. Willows had with him as passenger Mr. Frank Goodden, who afterwards became quite a famous exhibition flyer at Hendon, and was killed as a test pilot at the Royal Aircraft Factory during the War.

The crossing was made in the dark over sixty miles of water, and the ship landed at Douai near the Brégué Factory. There unfortunately it was wrecked in a heav gale two days later.

After he had repaired it, Mr. Willows flew it to Paris abou the end of December, and after making two flights ove Paris with passengers at the beginning of January, 191 *Willows III* was packed up and returned to London by ra and boat.

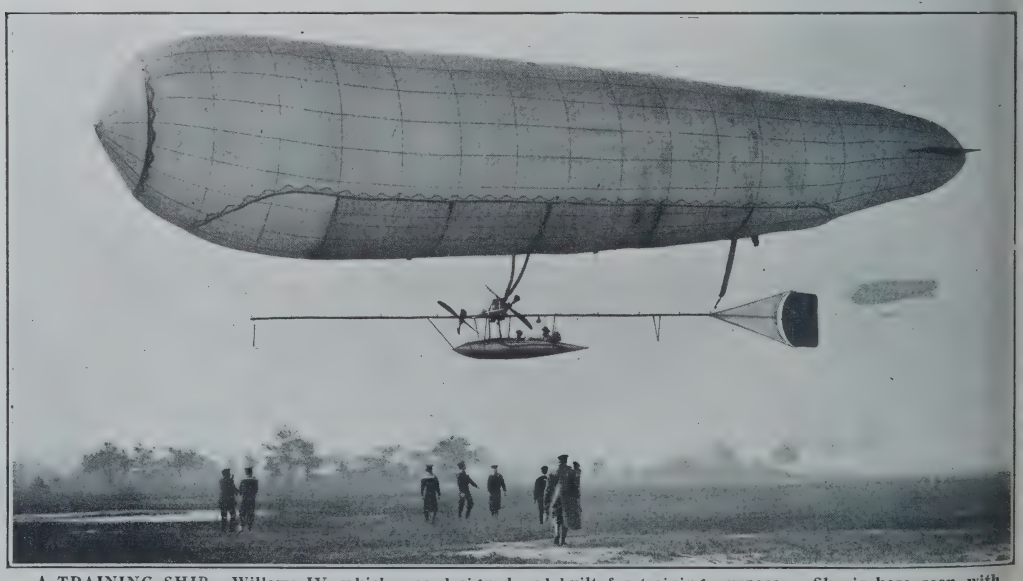
During 1911 *Willows III* was used for training work a Hendon. One of those who did a good deal of flying in th ship was Captain E. M. Maitland, later Air Commodore who was killed in the wrecking of R.38 after the Wa *Willows III* also made a number of flights over Wolverhamp ton and Birmingham.

Up to this point Mr. Willows had derived all his financia support from his father, a dentist at Penarth, near Cardif Mr. Willows Senior is now the South Wales representativ of the Royal Automobile Club. To him belongs much credi for his services to British Aeronautics.

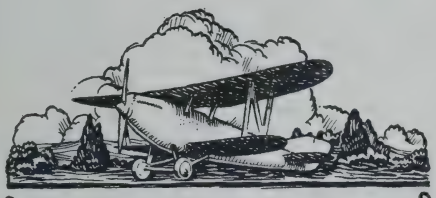
SUPPORT FROM THE MIDLANDS.

While at Birmingham Mr. Willows came in contact wit Mr. Gilbert Dennison, now Secretary of the Midland Aer Club, and the two joined forces, with the result that *Willow IV* was produced and made her first appearance in Ma 1912.

This was a ship of 20,000 cubic feet, 90 feet long by 2



A TRAINING SHIP.—Willows IV, which was designed and built for training purposes. She is here seen with naval personnel at Farnborough. The officer with his back to the audience is Commander Boothby, well-known as a strenuous advocate of airships. In the distance is seen one of the Army airships of the period.



CONFIDENCE.

The aircraft used in the following notable flights were fitted with Reed Patent all-metal Airscrews: Commander Byrd's flight to the North Pole and back; Capt. Wilkins' Polar Expedition flights; Lieut. Medaerts' 11,400-mile flight from Brussels to the Belgian Congo and back.

Sole Manufacturers, and Licensees of the Reed Patent Airscrew for the British Empire:

The Fairey Aviation Co., Ltd., Hayes, Middlesex.

FAIREY-REED
ALL-METAL AIRSCREW

feet diameter, with a 35-h.p. "Y" Anzani engine and had a speed of 32 m.p.h. She was specially designed for school work.

In November, 1912, she was taken over by the Admiralty, and in her a number of Naval airship officers who later became famous did their first real flying. Among them may be named Major Scott (the skipper of R.34 in her trans-Atlantic voyages), Commander Boothby, Air-Commodore Masterman, Lieutenant Woodcock, who was famous in the early days of the War, and Lieutenant Fletcher, now, one believes, Group Captain, R.A.F.

Another School Ship.

Willows V appeared in August, 1913, and was built at Hendon. She was of 45,000 cubic feet capacity, 120 feet long by 25 feet diameter, and had a 60-h.p. water-cooled E.N.V. engine and a speed of 35 m.p.h.

She also was designed as a school ship and was fitted with the usual Willows' swivelling propellers, but with an ingenious and simple belt drive which made her control absolutely fool-proof. She was still in use in 1914.

A Hush-Hush Ship.

The last of the Willows' airship series was *Willows VI*, an extremely interesting ship, which was built in March, 1915, to the express order of Lord Fisher, who was then First Lord of the Admiralty. Something was needed in the way of a submarine scout, so Mr. Willows designed this ship and built her in great secrecy and in seven weeks at Merton, in a workshop which later became the works of Airships Ltd.

She had a capacity of 70,000 cubic feet, was 140 feet long by 30 feet diameter, and had a speed of 42 m.p.h. with a 90-h.p. Curtiss engine. Her pilot during her tests was Captain Clive Waterlow, who was killed late in the War while manœuvring an airship on the ground.

This ship was actually intended to do the work which was afterwards done by the famous Blimps. And in fact the first Blimp was actually made by hanging the fuselage of an aeroplane underneath the envelope of *Willows IV*.

A Real Pioneer.

Thus it may be seen that Mr. Willows, whose twenty-first anniversary as an airship pilot is now recorded, was in fact the father of all British airships.

Our rigid airships have merely been copies, and generally rather bad copies, of Zeppelins, and apart from the two or three early Army airships and of 1911, 12 and 13, Blimps, our non-rigid airships have all been either actually French, like the *Astra Torres*, or German, like the old *Parseval*, or adaptations from those types.

When the Blimps came into use Mr. Willows, being a mere civilian, was shelved by the Naval people who were in charge of airships, so in July, 1916, he took a position in the Aeronautical Inspection Department, organising the inspection and final tests of kite-balloons for the Army. And in 1917 he was lent to the London Air Defence Area to assist in the production of balloon aprons.

After that he was released from the Army and formed the Willows Airship Company. During the last year of the War he made an immense number of very well built kite-balloons for the R.A.F.

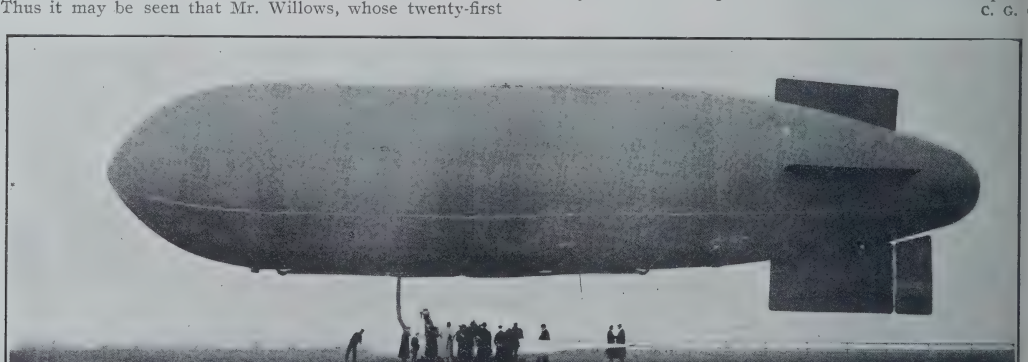
After the War as airship transport slumped even worse than did the aeroplane business, Mr. Willows took to shipping, and after doing very well for a while was unfortunately ship-wrecked on the Needles, where he lost everything that he had made during the War, and barely escaped with his life.

Unable to tear himself away altogether from his first love, he appeared last year at Wembley with a kite-balloon in which he took people aloft to view the Exhibition. In this way he continued to do good educative work.

One can only hope that his long and wide experience of airship work may not be quite lost to this country when airships again begin to come into their own, as they must do some day. For Mr. Willows still has many years of useful work before him, seeing that he is still under 40 years of age.

Those of us who have survived from the beginning of aeroplane flying in 1908 and 1909 are beginning to think that we are something like veterans in air transport. But we must all feel a wholesome respect for the only man in England who has so far been able to celebrate the twenty-first anniversary of his first experience of mechanical air transport.—

C. G. G.



THE LAST CIVILIAN EFFORT.—Willows V, which was used as a training ship at Hendon just before the outbreak of war in 1914.

THE KING'S CUP RACE.

The Race for the King's Cup will be held at the Hendon Aerodrome on Friday and Saturday, July 9 and 10.

The course for each day will be as follows :—

Hendon—Martlesham and back—144 miles. (Compulsory stop at Hendon of 30 minutes.)

Hendon—Cambridge and back—90 miles. (Compulsory stop at Hendon of 30 minutes.)

Hendon—Coventry and back—160 miles. (Compulsory stop at Hendon of one hour.)

Hendon—Cheltenham and back—170 miles. (Compulsory stop at Hendon of 30 minutes.)

Hendon—Salisbury and back—160 miles.

Total—724 miles on each day.

The entrant and pilot, or pilots, must be British subjects. The entrant must be an individual and not a company. The word "competitor" includes the entrant and all persons taking part in the race except passengers.

The race is open to any type of aircraft. The aircraft including the engine or engines must have been entirely constructed in the British Empire.

The entry fee is £10. This fee, together with the entry form, must be received by the Royal Aero Club, 3, Clifford Street, London, W.1, not later than 5 p.m. on Friday, July 2, 1926. The entrant is responsible for the accuracy of all particulars supplied by him to the Club relating to the aircraft and engine. The officials may require the entrant at his own expense to verify these particulars after the race, and for this purpose may require part of the engine to be taken down for examination.

The aircraft will be handicapped on a time allowance basis for the two courses and half of the total handicap will be allotted to each course.

THE GORDON-BENNETT BALLOON RACE.

On May 30, in heavy rain and a gale of wind, fourteen balloons, representing seven nations, left Wilryck Plain, near Antwerp, in competition for the Cup presented by the King of the Belgians to replace the original Gordon-Bennett Cup which was won outright by Belgium three years ago.

Two French and one Spanish balloon failed to start owing to mishaps. Three British balloons competed.

A south-westerly wind blew the balloons over Holland Denmark and Scandinavia, the winner proving to be the American balloon, "Goodyear III," piloted by Mr. Van Orman, which landed at Solveborg, Sweden, a distance from the starting point of 850 kms.

The runner-up was the U.S. Army balloon, "S.16," piloted by Capt. H. C. Gray, which covered a distance of 600 kms landing near Kracow, Mecklenburg.

The three British balloons, "Bee" (Mr. G. Meager and Flg. Off. M. H. Steff, R.A.F.), "Miramar" (Messrs. C. W. Berry and Capt. C. W. Spencer), and "Banshee III" (Sqn. Ldr. Baldwin, R.A.F., and Mr. Spencer) landed at Waalwijk, Deventer, and Veghel respectively.

THE DE HAVILLAND "MOTH"

ENGINE - 27-60 H.P. "CIRRUS"

Between May 6th and May 18th seven de Havilland "Moths" covered an aggregate distance of

15,275 MILES

upon services of National Importance. During the whole period there was no instance of delay in departure, no suspicion of mechanical breakdown and not a single involuntary landing.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
STAG LANE AERODROME, EDGWARE, MIDDLESEX

Telephone—Colindale 6160. Telegrams—"Havilland, Edgware."

DE HAVILLAND "MOTH"
SEATER LIGHT AEROPLANE.

R CYLINDER AIR-COOLED
INE WITH DUAL IGNITION.

DUAL CONTROL.

FOLDING WINGS.

ND STARTER IN COCKPIT.

UBBER IN COMPRESSION
UNDERCARRIAGE.

UGGAGE COMPARTMENT.

RANGE.....3½ HOURS.

OL CONSUMPTION...20 M.P.G.

ED RANGE.....40-90 M.P.H.

EROBATIC CERTIFICATE
OF AIRWORTHINESS.



IT"
GRAPH

THE ROYAL AIR FORCE.

The London Gazette.

May 25.

GENERAL DUTIES BRANCH.—Plt. Off. Arthur John Thompson is promoted to the rank of Flg. Off. (Mar. 8). The following Plt. Offs. on probation are confirmed in rank :—Philip Reginald Barwell, James Leslie Chadwick, Frederick George Downing, Percy Geoffrey Spear Gardiner, Charles Henry Jones, Geoffrey William Tuttle, William Lawson Whitlock (Mar. 28); Hugh Forbes Gower (Mar. 30); Maxwell Harvey Frame (Apr. 10).

Group Capt. Philip Bennet Joubert de la Ferté, C.M.G., D.S.O., is restored to full pay from half-pay (May 18), Wing Cdr. Percival Scott Rickcord (Cdr., R.N., retd.), remains on loan to the R.A.F. for a further year (Mar. 1); Sq. Ldr. Frederick Esk Sandford, A.F.C., is placed on the retired list at his own request (May 15).

The following Flg. Offs. are transferred to the Reserve, Class A :—William Frederick Shaylor (May 23); Anthony White Wood (May 26). Plt. Off. on probation A. A. Radclyffe resigns his S.S. comn. (Apr. 21). The S.S. comn of Plt. Off. on probation F. Sisson is terminated on cessation of duty (May 26); Flg. Off. E. F. Colam (Lt. Middx. Regt.), relinquishes his temp. comn. on resigning his comn. in the Army (May 22).

Plt. Off. Richard Rudyard Turner is dismissed the service by sentence of General Court Martial (May 4).

STORES BRANCH.—Flg. Off. Henry Owen Fellowes is granted a perm. comn. in this rank with effect from Aug. 10, 1925, on completion of probationary service.

MEDICAL BRANCH.—The undermentioned Flg. Offs. are promoted to the rank of Flt. Lt. (May 19) :—A. Dickson, M.B.; R. T. F. Grace, M.B.; Flg. Off. Harris Moses Levy resigns his S.S. comn. (May 26).

RESERVE OF AIR FORCE OFFICERS.—Obs. Off. Alfred Charles Walker is transferred from Class B to Class C (May 25). The following Flg. Offs. relinquish their comns. on completion of service :—F. W. Knox (May 8), J. T. Rymer (May 22).

Appointments.

Week ending May 31.

GENERAL DUTIES BRANCH.—Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., to H.Q., Fighting Area, Kenley, on appointment as Air Officer Commanding, 20/5.

Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., to R.A.F. Depot, Uxbridge, Supernumerary, pending posting overseas, 20/5.

Wing Commanders G. F. Pretyman, D.S.O., O.B.E., to H.Q., Fighting Area, Kenley, for Air Staff duties, 20/5. C. G. S. Gould, to H.Q., Fighting Area, Kenley, for Technical Staff duties, 20/5. H. L. M. Brock, D.S.O., to H.Q., Air Defences of Great Britain, for Air Staff duties, instead of to Station H.Q., Catterick, as previously notified, 25/5.

Squadron Leaders E. H. Sparling, A.F.C., to R.A.F. Depot, Uxbridge, 26/5. A. P. Maurice, D.F.C., to No. 56 Sqdn., Biggin Hill, 25/5. G. S. Trewin, to Electrical and Wireless School, Flowerdown, 19/5. E. B. Rice, to H.Q., Fighting Area, Kenley, 20/5. D. Cloete, M.C., A.F.C., to No. 9 Sqdn., Manston, 18/6. J. H. D'Albiac, D.S.O., to No. 99 Sqdn., Bircham Newton, 25/5. P. B. Hunter, to No. 1 School of T.T. (Apprentices), Halton, 15/5.

Flight Lieutenants B. J. W. Brady, D.S.M., to No. 4 Arm. Car Coy., Iraq, 5/3. H. Hackney, to No. 2 F.T.S., Digby, 25/5. J. K. A. Jeakes, D.F.C., to No. 4 Sqdn., Farnborough, 31/5. W. Catchpole, A.F.C., to R.A.F. M.T. Depot, Shrewsbury, 25/5. H. J. Saker, to H.Q., Air Defences of Great Britain, Air Ministry, 20/5. J. G. Walser, M.C., to No. 4 Sqdn., Farnborough, 28/5. R. J. Read and J. Blackford, to H.Q., Fighting Area, Kenley, 20/5.

Flying Officers S. Symonds, W. J. Richards and A. H. Padley, to H.Q., Fighting Area, Kenley, 20/5. N. Vintcent, D.F.C., to No. 22 Sqdn., Martlesham Heath, 16/5. H. W. Raeburn, to No. 207 Sqdn., Eastchurch, 3/5. F. W. W. Wilson, to R.A.F. Base, Calshot, instead of to School of Naval Co-operation as previously notified, 20/4. J. Bradbury, to No. 15 Sqdn., Martlesham Heath, 22/5. F. A. O'Brien, to R.A.F. Depot, Uxbridge, 1/6. A. H. C. Derby, to R.A.F. Depot, Uxbridge, 9/6.

Pilot Officers A. L. Ottway, to No. 84 Sqdn., Iraq, 1/5. L. F. T. Price, to R.A.F. Depot, Uxbridge, 25/5. L. T. Pankhurst, to No. 5 Sqdn., India, instead of to Aircraft Depot as previously notified, 1/4.

STORES BRANCH.—Wing Commander F. C. Williams, O.B.E., to R.A.F. Depot, Uxbridge, pending posting to Air Defences of Great Britain, 17/5. Squadron Leader H. E. J. Hewitt, to H.Q., Fighting Area, Kenley, 20/5. Flight Lieutenant M. J. James, M.B.E., to H.Q., Fighting Area, Kenley, 20/5. Flying Officer J. H. P. Clarke, to Aircraft Depot, India, 27/4.

Iraq Awards.

H.M. the King has given orders for the following promotion in, and appointments to, the Order of the British Empire, and has approved of the following awards for services connected with the operations in Iraq, from September to November, 1924 :—

The Royal Air Force : O.B.E. (Military Division), Sq. Ldr. E. R. L. Corballis, D.S.O., Flt. Lt. H. V. Drew, A.F.C.

Distinguished Flying Cross : Flt. Lt. E. P. Roberts, M.C., D.C.M., Flt. Lt. S. L. G. Pope.

Distinguished Flying Medal : 240449 L-AC (now Cpl.) F. M. Pape, 342485 L-AC. T. J. Waddell, 344579 AC.2. E. Barber (since killed in action).

Kurdistan Awards.

H.M. the King has given orders for the following awards for services connected with the operations in Kurdistan (Choarta region) from June 6 to July 10, 1925.

The Royal Air Force : Distinguished Service Order : Sq. Ldr. J. M. Robb, D.F.C.

Distinguished Flying Medal : 142494 Serjt. (Pilot) E. P. H. Wells.

The Indian General Service Medal.

The Air Ministry announces that His Majesty the King has been graciously pleased to command that the India General Service Medal, 1908, in silver, with clasp "Waziristan 1925," shall be granted for the Royal Air Force operations carri out in Waziristan between Mar. 9, 1925, and May 1, 192 under the command of Wing Cdr. (now Group Captai R. C. M. Pink, C.B.E., R.A.F.

Detailed particulars as to the conditions under which t medal and clasp will be awarded, and as to the method which applications are to be submitted, will be promulgat at a later date.

The King's Levee.

The King held a Levée at St. James's Palace on May Among the Members of the Royal Family present w Group Captain H.R.H. the Duke of York, K.G.

Among those in attendance upon His Majesty was A Marshal Sir John Salmond, Principal Air Aide-de-Camp.

Among those present was Group Capt. P. F. M. Fellowe Aide-de-Camp-in-Waiting.

The following Officer of the R.A.F. was among those w attended the Levée—Flt. Lt. Ian Cullen.

The following Officers of the R.A.F. were presented to t King by the Secretary of State for the Home Department :

Anderson, Flg. Off. James, on first appointment; Babington, Wi Cdr. Philip, M.C., A.F.C., on promotion; Beaumont, Flt. Lt. Frank, first appointment; Blandy, Air Commodore Lyster, C.B., D.S.O., promotion. Gardner, Sq. Ldr. Richard, D.S.C., on promotion; Gib Flt. Lt. Victor, D.S.C., on first appointment; Hollinghurst, Flt. Leslie, D.F.C., on first appointment; Nutting, Wing Cdr. Charl O.B.E., D.S.C., on promotion; Orlebar, Flt. Lt. Augustus, A.F.C., first appointment; Osborne, Flt. Lt. Richard, on first appointme Pitcher, Air Commodore Duncan, C.M.G., C.B.E., D.S.O., on appoi ment to command No. 22 Group; Pryor, Sq. Ldr. Arthur, on promotio Shipwright, Flg. Off. Alan T. K., D.F.C., on first appointment; Tul Flg. Off. Athol G. S., on first appointment; Weston, Flt. Lt. W. on first appointment.

The Senior Officers' Course, Sheerness.

The following officers of the R.A.F. have joined the Arm Seniors' School, Sheerness, for the second of the thr courses arranged for 1926 :—

Sq. Ldr. C. E. H. Medhurst, O.B.E., M.C., and Sq. Ldr. W. St. C. G. Leask, M.C

A Fatal Accident.

The Air Ministry regrets to announce that as the res of an accident at Tents Muir, Leuchars, to a Fairey Fl catcher of the R.A.F. Training Base, Leuchars, on May 1926, Peter Granville Smith, Lieut., RN., Flg. Off., R.A.F. the pilot and sole occupant of the aircraft, was severely i jured and died later in the day.

The R.A.F. Cairo-Cape Town Flight.

The Cape Flight, R.A.F., under Wing Cdr. C. W. H. Pi ford, O.B.E., A.F.C., arrived at Wadi Halfa on May 25, a at Aswan on May 26.

The Flight landed at Heliopolis at 8.30 a.m., on May and was welcomed by a representative of Lord Lloyd, t High Commissioner for Egypt, by General Sir Richa Haking, G.O.C. the British Forces in Egypt, and by Vice-Marshal Sir Oliver Swann, A.O.C., Middle East.

The machines were taken to Aboukir on May 29, to fitted with floats. According to present arrangements, t Cape Flight will leave Aboukir about June 9 for England, Sollum, Suda Bay, Athens, Corfu, Taranto, Narbonne, Rocq fort and Brest, arriving at Lee-on-Solent about June 19.

A Matter of History.

The following statement has been issued by t Admiralty :—

The attention of the Admiralty has been drawn to a statement page 86 of the official "Narrative of the Battle of Jutland" to effect that the Seaplane Carrier *Campania* was unable to raise steam time to sail with the Fleet, left Scapa at 1.30 a.m., but was ordes back with defects at 4.30 a.m., May 31, 1916. This statement erroneous. The following are the facts :—

The *Campania* had been exercising with seaplanes during the aft noon of May 30, and, on returning, anchored at 5.15 p.m. in Scr Bay at a spot six miles to the north-eastward of the fleet anchora She received the 5.35 p.m. preparatory signal for the Fleet to le Scapa, and at 7 p.m she received a signal to raise steam for fl speed; by 9.30 p.m. she was ready to proceed. Her stationing sig was sent at 10.54 p.m., but this she did not receive, and it was o at 11.45 p.m., when she was asked by the Rear-Admiral, Scapa, she was leaving that night, that her commanding officer realised Fleet had sailed, as neither the ships nor their lights could be se from his anchorage. The *Campania* at once weighed anchor and p ceeded out of harbour.

The Admiralty had informed the Commander-in-Chief on May 30 t eight enemy submarines were believed to be in the North Sea, a the *Trident* was attacked at 6.45 p.m. on the 30th. Another submar was sighted and fired at by a motor launch off the north-east co on the same day, and the *Galatea* was attacked by one at 3.55 a.m. the 31st. Bearing these facts in mind, together with the knowle that the *Campania* had no anti-submarine escort and was already far astern of the fleet as to make it impossible for her to overtake the Commander-in-Chief ordered her to return to her base. It only fair to the engine-room staff of the *Campania*, which consis entirely of Royal Naval Reserve officers, that these facts should made public.

The statement in the Admiralty narrative refers to the sortie the fleet on another occasion.

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IN DISGRACE.—A photograph taken at Kenley of No. 32 Sqdn.'s Flight after the Bombing of the Baker. The second machine from the right in the left-hand picture is the guilty party. When photographed it had a blackboard fixed to it, with Service information on it,—which reminded an onlooker of "The Ancient Mariner" who said "Instead of a cross an albatross about my neck was hung."

Pageant Preparedness.

The eliminating trials for the Low-Bombing Competition, the winners of which will perform at the R.A.F. Display on July 3, took place at Duxford on May 28.

Fifty-two machines took part in the trials, the competitors being a selected Flight from each of eleven Squadrons of the Fighting Area, Air Defences of Great Britain, and two Naval Co-operation Flights.

The competition was won by the Flight representing No. 19 (Fighter) Sqdn., Duxford (Grebes), with No. 41 (Fighter) Sqdn., Northolt (Siskins) second and No. 111 (Fighter) Sqdn. Duxford (Grebes), third.

The other Squadrons represented were Nos. 32 (Kenley), 56 (Biggin Hill), 25 (Hawkinge), 17 (Hawkinge), 29 (Duxford), 3 (Upavon), 23 (Henlow), 43 (Henlow), and 404 and 406 Flights (Leuchars).

The eliminating trials were originally to have taken place at Kenley, but after an unfortunate incident, in which a practice smoke-bomb became detached from a Grebe of No. 32 Squadron, and went through the house of an inoffensive baker in Upper Caterham, it was decided to remove the trials to a rather unpopulated district. The suggestion that it would be more simple to move the baker did not receive any support.

The bomb went through the roof and through the floor of a bedroom, and burst in the sitting-room. Fortunately it did not hit anybody, and merely filled the house with smoke. Mr. R. W. Coleman, the baker, a man of some 60 years of age, took the whole affair in a truly sporting spirit and only asked that he might keep the bomb as a souvenir.

The Squadron concerned are not likely to be allowed to forget the incident, however, although humorists who feel inclined to ask, "Who bombed the baker?" would do well to time and place their efforts with circumspection, as they will probably find No. 32 ready with spanners and spare struts, like that cavalry regiment which, according to Kipling, appears with stable-brooms and belts if anyone shouts "Threes about!" into their barrack yard.

Rumours of Appointments.

Rumour is busy at the Air Ministry with the names of various Senior Officers whose tours of service will expire at the end of this year. Probably official announcements will not appear for some considerable time but one believes that the following moves will probably be made:—

Sir Geoffrey Salmond, at present Air Member for Supply and Research on the Air Council, will take over the India Command from Sir Edward Ellington.

Sir Edward Ellington will take over the Iraq Command from Sir John Higgins.

Sir John Higgins will become Air Member for Supply and Research *vice* Sir Geoffrey Salmond.

Air Vice-Marshal Webb-Bowen will take over the Middle East Command from Sir Oliver Swann.

Sir Oliver Swann will take over the Inland Area from Air Vice-Marshal Webb-Bowen.

Group Captain M. G. Christie, at present our Air Attaché in Washington, will become Director of Technical Development vice Air Commodore F. C. Halahan.

Wing Cdr. T. G. Hetherington will replace Group Captain Christie at Washington.

Air Commodore Samson will become Chief Staff Officer in Egypt, presumably at first under Sir Oliver Swann and later under Air Vice-Marshal Webb-Bowen.

One cannot guarantee the accuracy of any of these statements, but they are based on fairly good authority, and, with hardly an exception, they represent an excellent choice of the right man for each appointment.



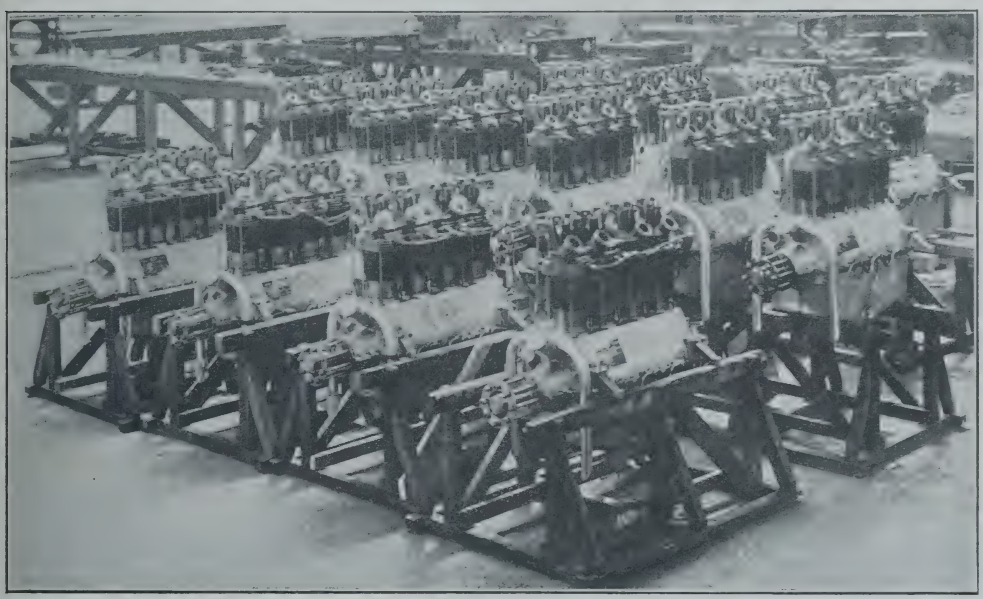
ONE OF THE LATEST.—A Gloster Gamecock (Jupiter engine) low bombing at Duxford. One would remind the pilot that if he dropped a real bomb when so low he would certainly blow the tail off his machine.

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Extract from FLIGHT *Editorial 20th May, 1926.*

"The amazing capabilities of the de Havilland 'Moths' with their 'CIRRUS' engines to go anywhere at any time in any weather has been demonstrated over and over again, although in this connection one should not forget the pilots who flew the machines, and to whose determination to 'get through' a very great deal of the success is of course due."



A BATCH OF "CIRRUS" ENGINES BEING PREPARED FOR DESPATCH.

15,445 MILES ON A.D.C. "CIRRUS" ENGINES.

During the recent strike the A.D.C. "CIRRUS" engines fitted in the various D.H. "Moths" used for the transport of newspapers, covered a total mileage of 15,445 miles with 100% EFFICIENCY.

(Extract from Lieut.-Commander H. E. PERRIN'S article in "Flight" 20-5-26.)

"One cannot pay too great a tribute to the way in which our aeroplanes stood up to their work; enabling us to maintain 100 per cent. efficiency. The little de Havilland 'Moths,' with their 'CIRRUS' engines, emerged from the ordeal amazingly well."

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The Birmingham Tattoo.

During the period between May 3 and May 15 the Warwickshire Territorial Army Association organised, with the approval of the War Office and the co-operation of General Sir Alexander Godley, K.C.B., K.C.M.G., General Officer Commanding-in-Chief, Southern Command, a Torchlight Tattoo at King's Heath, Birmingham. The programme was very similar to that at the Aldershot Tattoo

In spite of the strike a number of people saw the display and, in order to give an opportunity to those who were unable to get there owing to lack of transport, the Tattoo was extended to May 17 to 20 inclusive. During the previous week the performance had to be cancelled on two nights because the ground was flooded.

Aerial interest was given to the proceedings by three Hawker Woodcocks (Bristol Jupiter engines) of No. 3 Fighter Squadron, R.A.F., under Sq. Ldr. J. M. Robb, D.F.C. These machines were housed at Castle Bromwich Aerodrome, whence they flew to King's Heath.

A Birmingham correspondent says that they gave a brief but very fine display. The machines appeared first over the arena at a height of a few hundred feet in Vee formation, lit up by electric lights as the aeroplanes were at Wembley and at Aldershot. After arriving the formation broke up and climbed to a height of some thousands of feet, whence each machine dived to within fifty feet of the ground and zoomed. The quality of the flying was magnificent and made a great impression on the spectators.

A display of physical drill was also given by airmen of the R.A.F. Depot under the command of Flt. Lt. F. G. Sheriff, M.C.

As You Were.

Unfortunately a mis-statement occurred in the account of the R.A.F.'s operations during the strike. As there was no official information available from the Air Ministry, and as one was careful not to ask for information direct from squadrons, one had to rely on second-hand information, with the result that the statement was made that the Vickers Virginias of 58 Squadron ran newspapers from Northolt to Catterick and Edinburgh, and that No. 9 Squadron, from Manston, carried newspapers from Biggin Hill to Sealand.

The facts were the other way round. 58 Squadron ran from Northolt to Sealand throughout the strike, whereas No. 9 Squadron ran from Biggin Hill to Catterick. There is interest in noting that of 58 Squadron's machines only one machine was ever over its schedule time by ten minutes on the flight, which lasted from 2½ to 3½ hours according to the wind. This was particularly good, considering that the weather was very bad the whole time, and there was only one forced landing which was due to reduction-gear trouble.

In addition 58 Squadron did one trip with five machines to Edinburgh and back, carrying wireless personnel, leaving Northolt at 04.00 hours and arriving back at 22.00 hours in very bad weather.

Among other work done by 58 Squadron, complete wireless telegraph stations with equipment and personnel were transported to Shotwick, Catterick and Norwich in Vickers Victorias.

Naturally 58 Squadron does not wish to take unto itself any of the reflected glory of No. 9. Hence this correction, which, one may add, comes from an entirely unofficial source.

The Fleet Air Arm.

The Times of May 26 states :—

Paymaster-Commander J. D. M. Cavanagh, who is joining the aircraft-carrier *Eagle* with effect from to-day, was at the Admiralty during the war as Secretary to Vice-Admiral Sir Alexander Duff, Assistant Chief of the Naval Staff, and was awarded the C.M.G. in May, 1919, for his valuable services in connexion with the anti-submarine and convoy organisations. He has since served as paymaster-commander of the monitor *Erebus* and the battleship *Ramillies*, and in 1921-23 was Paymaster at Bermuda Dockyard. The *Eagle* is now at Malta.

The Times of May 27 states :—

An explanation is given in Fleet Orders to the meanings which are ordinarily to be attached to certain expressions used in official correspondence regarding naval officers serving in the R.A.F. The term "attached" is to apply to naval officers serving under the conditions of A.F.O. 1058/24. Under this order, volunteers were called for in connexion with the naval air work of the Fleet, for duty as pilots or otherwise, under the arrangement approved by the Government, whereby the officer *personnel* of the Fleet Air Arm, up to 70 per cent., might be provided from the Navy.

The term "lent" is to apply to naval officers serving in the R.A.F. under naval conditions as regards pay and rank, etc. All air observation duties for the Fleet, including gunnery, spotting, and air reconnaissance, are carried out by naval observers, who are not "attached" to the R.A.F., as in the case of those employed as pilots or on other naval air work.

The term "seconded" is to apply to naval officers serving in the R.A.F. entirely under R.A.F. conditions Although the terms will usually be used with these meanings, such action obviously does not affect their meanings under the Air Force Act, etc., and care is ordered to be taken to discriminate when they are used in some special sense

The Independent Air Force R.A.F Dinner.

The Eighth Annual Re-Union Dinner of the Independent Force, R.A.F., will be held at the Connaught Rooms, Great Queen Street, on Friday, June 11, at 7.45 p.m.

Air Chief Marshal Sir Hugh Trenchard, Bart., G.C.B., D.S.O., Chief of the Air Staff, will be in the Chair.

It is hoped that Group Captain H.R.H. the Duke of York, K.G., K.T., G.C.V.O., will be able to attend.

Tickets for members of the Dinner Club are 10s. 6d. (exclusive of wines) and for non-members 12s. 6d. The amount may either be remitted to the Secretary or paid at the Dinner.

Evening Dress with Miniatures will be worn.

Members of the Dinner Club are reminded that the annual subscription of 5s. is now due.



THE IRAQ CHAMPION TEAM.—No. 8 (Bombing) Sqdn., R.A.F., the winners of the R.A.F. Inter-Unit Athletic Championships, Iraq, 1926.

Standing (left to right) AC.1. Winn, AC.1. Peacock, AC.1. Pearson, L-AC. Attrill, L-AC. Mitchell, AC.2. Gallimore, AC.1. Tame, Cpl. Buckle, L-AC. Wavell.

Sitting (left to right) AC.2. Thomas, Plt. Off. B. A. C. Danbury, Flt. Lt. M. C. Dick, Sq. Ldr. W. A. McClaughry, D.S.O., M.C., D.F.C., Plt. Off. B. W. Knox, Flg. Off. W. W. Deane, L-AC. Brown.

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		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60
,,	210	185.	60.32	Central

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central

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Flying Training in the Indian Army.

The Times of May 27 states :—

An Army Instruction states that all ranks serving in India may be required to go up in aircraft as part of their training or for specific duty. The authority for ordering flights rests with generals commanding, colonels on the Staff, commandants of schools, and commanders of regiments, battalions, and artillery brigades, by written authorisation.

Casualties arising from such duty will be regarded as due to active service for the purpose of pension or gratuity.

[Until such provisions as those made in the last paragraph are considered unnecessary, flying cannot be regarded as an ordinary means of transport.—Ed.]

Flood Fighting at Hinaidi.

Somewhere about the middle of April the great aerodrome at Hinaidi near Baghdad was in danger of being drowned out as the result of floods in the Tigris and the Diala. Fortunately the bund, or embankment, held good, but only thanks to the strenuous efforts of hundreds of airmen, soldiers and coolies, who worked on it vigorously day and night wherever it showed signs of breaking.

Little about this flood appeared in the English papers, beyond a reference to the river being high at Baghdad. Consequently few people realise that but for the strenuous efforts of the Other Ranks of the R.A.F. probably some millions of pounds of damage would have been done to aircraft materiel at Hinaidi.

Those who write scoffingly of the R.A.F. as "The Royal Ground Force" do not realise that the efficacy of the Service as an air force depends also on its being a reliable ground force, even to the extent of handling the ground itself to protect its matériel. And certainly the young man who joins the R.A.F. to see the World is liable to see a lot of earth, at Hinaidi, for these floods are annual affairs.

But who first thought of spending millions of pounds on permanent buildings at Hinaidi when it is known to be in the flood area?

R.A.F SPORTS AND PASTIMES.

R.A.F. Station Athletics.

Station Sports Officers are asked to send accounts of Station Sports for inclusion in The Aeroplane as soon as possible after the date of the Sports in order that they may be published before the R.A.F. Championships on June 23, 24 and 26.

The reason for this is that when the R.A.F. Championships take place there is much interest in seeing what those who distinguish themselves therein have done already in their station sports.

An Air Force Success.

AC. S. Ferris, R.A.F., Uxbridge, who won the Marathon race for *The Sporting Life* trophy last year, was again successful on May 29, when he completed the course of 26 miles 385 yards in 2 hours, 42 minutes and 24.1-5 seconds. Although his time was slightly slower than last year, AC. Ferris beat the second man by nearly four minutes.

The R.A.F. Swimming Association.

A Swimming Association has recently been formed in the R.A.F. and all Units are requested to get into communication with the Hon. Secretary of their district.

The Association Championships will be held during September, 1926, with the following events :—100 yards and 440 yards, free style; 100 yards breast stroke, plunging, diving, relay race and water polo. The Championships are open to all ranks of the R.A.F.

The R.A.F. Swimming Association Certificate will be awarded to all ranks of the R.A.F. (Regular) who pass the test of swimming continuously 50 yards breast stroke, 50 yards on the back and 50 yards free style. The Station issuing the greatest number of Certificates in proportion to its total strength during the year will be awarded a Cup or Shield which it will hold until the next year.

Units with baths (swimming) have offered facilities to Units not so fortunate.

The Association points out that it has one advantage over others. It is not limited to experts. Everyone can play their part in qualifying for the certificate and assisting their station to win the Cup.

Air Vice-Marshal C. L. Lambe, C.B., C.M.G., D.S.O., is the President of the Association, Wing Cdr. R. J. Mounsey O.B.E., the Chairman, and Flg. Off. V. G. A. Bennett (H.Q. Coastal Area) the Hon. Secretary.

Association Football in Palestine.

The record set up by the Command H.Q. Football Club, Palestine during the last three seasons is one which would not discredit clubs of far higher repute. In the season 1923-24 they finished a close second to the Palestine M.T. Pool in the Command League, being only two points behind. They were beaten at home in the same season by No. 14 Sqdn., R.A.F., in the first round of the Command Knock-out Cup.

Entering for the Palestine Challenge Cup (presented by Colonel W. Hudson, P.M.G.)—a competition open to all service and civilian teams in Palestine—they met stern opposition in No. 2 Armoured Car Company, R.A.F., and it was only after three replays that they qualified for admission to the third round. After this victory they surmounted all other barriers and finished off the season by beating the representative team of No. 1 Company, Duke of Wellington's Regiment in the final by 2—1 after extra time.

The team at this period was composed of: Cotton; Wood, Macey; McKernan, Foord, Gildea; Dean, Morris, Plastow, Atkin, Acquroff. Plastow, Acquroff and Wood were also selected during the season to play for Palestine against the "Hakoah," the Austrian team which made such a successful tour of England a few years previously.

A mediocre start was made in the 1924-25 season, the first three League games being drawn. Cotton, Plastow and Acquroff had left the Unit, their places being taken by Paddock, A. A. Wallace and Doe respectively. Two other custodians, Halliwell and Pratt, were also tried in goal.

H.Q. did not lose a League game throughout the season, and finished at the top of the League with 29 out of a possible 32 points.

The competition for the Command Knock-out Cup was not held owing to insufficient entries being received, but in the Palestine Challenge Cup Competition, Command H.Q. again proved successful. In the semi-final they met and defeated Haifa Railway Institute F.C. 4—1 and proved victors over No. 14 Sqdn., R.A.F., in the final 4—0. Acquroff had by this time returned to the Unit and scored a goal against the Railway Institute in the semi-final and two against No. 14 Sqdn. in the final. The team appearing in the final was :—Paddock; Wood, Macey; McKernan, Foord, Gildea; Dean, Morris, Wallace, A. A., Atkin, Acquroff. Foord, Atkin and Acquroff were selected to play against the "Hakoah."

H.Q. received a surprise when they met their old rivals, No. 2 Armoured Car Company, R.A.F., in the first League match of the 1925—26 season, being defeated 5—0. However, they soon struck the winning vein and went through the League with only one other defeat 5—0, against "B" Sqdn., 9th Q.R. Lancers. Out of a possible 44 points they collected 38.

Many changes to the team had been made in the meantime; Wood, Gildea and McKernan had left for England, and Morris and Atkin had been transferred to other Units. Of the newcomers only two promised to be up to the standard of the first team and a call had to be made on the reserves.

The Command Knock-out Cup Competition was entered and H.Q. in the first round, met and defeated "A" Sqdn., 9th Q.R. Lancers 6—1. In the second round No. 2 Armoured Car Co., R.A.F., suffered defeat 2—1, and H.Q., 9th Q.R. Lancers, met the same fate in the semi-final, losing by 4—0. A decisive victory was scored over Palestine General Hospital in the final, H.Q. winning 4—1.

In the competition for the Palestine Challenge Cup, H.Q. again fought their way through to the final to meet No. 14 Sqdn., R.A.F. on the ground of the Sports Club, Jerusalem. After a keenly-contested game (both teams playing fine football) necessitating a half-hour's extra play, H.Q. emerged victorious by three goals to one, thus proving their right to the trophy.

The team was composed of :—Speechley; Dean, Wallace, J. C. Mitchell, Foord, Bricknell; Burns, Acquroff, Wallace, A. A., Lonergan Doe.

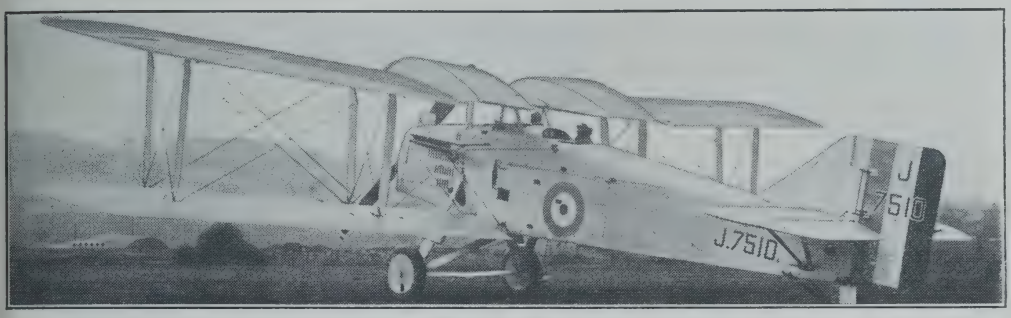
Summary :—1923-24, runners-up Command League; winners, Palestine Challenge Cup. 1924-25, winners Command League, winners Palestine Challenge Cup 1925-26, winners Command League; winners Knock-out Cup, winners Palestine Challenge Cup.

Five of the team are due for transfer to England this year, but it is hoped their successors will strive to carry on the tradition of the Club.



PALESTINE.—Command H.Q. Association Football Team. This team won the Palestine Challenge Cup in 1923-24, 1924-25 and 1925-26. They also won the Command League Cup in 1924-25 and 1925-26 and the Knock-out Cup in 1925-26.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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THE METAL-CLAD AIRSHIP.

Those who are interested in radical development in airships will do well to attend the lecture which is being given on Friday next, June 4, to the Institution of Aeronautical Engineers in the lecture room of the Junior Institution of Engineers at 39, Victoria Street, S.W., at 6.30 p.m., by Mr. Ralph Upson on "The Metal-Clad Airship."

Mr. Upson, who is on a short visit to Europe, is the moving spirit as well as being the chief engineer of the Aircraft Development Corporation of Detroit, Michigan. In the past Mr. Upson was quite a famous balloonist and during the War naturally turned his attention towards airship development. Of late years he has evolved a system of constructing airships on a metal frame with a metal skin which serves all the combined purposes of the gas-bags, the fabric outer covering, and the internal wire bracing of the existing types of rigid airships.

He has evolved a system of rivetting which makes the metal skin absolutely gas-tight and at the same time makes it a proper mechanical structure. All the tests and experiments which have been going on over a series of years have proved very satisfactory and models of large size have stood up to all the trials to which they have been submitted.

The result is that the Aircraft Development Corporation has just received from the Government of the United States a definite order for a metal-clad airship of 200,000 cubic feet capacity.

Mr. Upson, who arrived in England on May 31, after having been to see the start of the Gordon Bennett Balloon Race at Antwerp, has told one that this ship will have two Wright Whirlwind engines of 200 h.p. each and will carry a crew of three or four, besides five or six passengers, according to the amount of petrol carried. Thus it will be possible for the firm to give a proper demonstration of the capabilities of their system of aircraft design and construction.

As the metal-clad airship is a radical departure from all previous designs Mr. Upson's lecture is bound to be of outstanding interest not only to the people in this country who are directly concerned with airships but also to aeroplane constructors and designers. Therefore one hopes that all readers of THE AEROPLANE who take an intelligent interest in aeronautical progress will avail themselves of this opportunity of learning something new.

One suggests to aircraft manufacturers that in their own interests they would do well to give the junior members of their design staffs special facilities for attending this lecture. They will be welcomed by the I.Ae.E.

One would like to congratulate the Institution of Aeronautical Engineers on their enterprise in arranging this lecture at short notice. As already mentioned, Mr. Upson only arrived in England on Monday, and the arrangements for the lecture were made the same afternoon. Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P., President of the Institution will take the Chair, and as he himself was a notable balloonist before the days of aeroplanes and is the holder of No. 1 Aviator's Certificate of the Royal Aero Club, he is undoubtedly the most appropriate Chairman for such a gathering.—C. G. G.

THE ROYAL AERO CLUB LUNCH TO LIEUT.-CDR. BYRD, U.S.N.

On Friday, May 28, the Royal Aero Club entertained at lunch Lieut.-Cdr. R. E. Byrd, U.S.N., Lieut. A. B. Parker, U.S.M.C., Lieut. G. O. Noville, U.S.N.R.F., and Aviation Pilot Floyd Bennett, U.S.N., members of the Byrd Arctic Expedition, the first to fly over the North Pole. Among those present to greet them were Lieut.-Col. F. K. McClean, A.F.C., Chairman of the Royal Aero Club, Mr. T. O. M. Sopwith, Chairman of the S.B.A.C., Capt. W. C. Watts, U.S. Naval Attaché, Commander J. C. Hunsaker, U.S.N., Major H. C. Davidson, U.S. Military Air Attaché, Mr. C. R. Fairey, Sir Henry White Smith, C.B.E., Major H. Hemming, A.F.C., Lieut.-Col. W. A. Bristow, Lieut.-Col. M. O. Darby, Mr. C. V. Allen, Secretary of the S.B.A.C., Mr. H. E. Perrin, Secretary of the Royal Aero Club, and members of the Press.

Lieut.-Col. Frank McClean, who presided, said that the members of the Royal Aero Club wished to express their appreciation for the wonderful performance in carrying out the North Pole flight and as the premier Aviation sporting club in the World felt the honour of being the first to welcome the members of this very sporting and private venture.

Mr. Sopwith, as chairman of the S.B.A.C., welcomed them on behalf of the British Aviation Industry and remarked that generations had been trying to get to the North Pole, and with almost the first flick Commander Byrd had got there without a hold-up of any kind.

Lieut.-Commander Byrd, U.S.N., acknowledged the welcome from what he considered the greatest Aero Club in the world. Although he spoke for over an hour, he modestly devoted nearly half his time to tracing the efforts of the early pioneers of aerial polar exploration. He also recalled his earlier connections with England, first as a patient at the R.N. Hospital at Plymouth, secondly while co-operating with the R.A.F. during the War, and finally as a member of the crew of the ill-fated R.38. In connection with the last, he mentioned that he had been attending a party in London and missed his train to Howden to join the ship on the day she fell into the Humber.

Amundsen had said, as the result of his previous failures with aeroplanes, that heavier-than-air craft could not conquer the Arctic, and this had made it hard to collect funds for his expedition. He had approached one millionaire who said that he wouldn't give a damned cent at the time, but if they returned alive he would let them have $10,000 to clear up the mess. However he had 50 keen volunteers who contributed largely to the success of the expedition.

Apropos the commander of the expedition and the type of machine used, the inimitable Cy. Caldwell has remarked that Commander Byrd belongs to the F.F.V. (First Families of Virginia) and the machine was manufactured by the L.F.N.J. (Last Family to arrive in New Jersey), an interesting combination taken from the Social Register and the Immigration List.

All the members of the expedition speak very highly of the Fokker three-engined monoplane. Commander Byrd went on to say that on the arrival of his ship, the *Chantier*, at King's Bay, Spitzbergen, it was impossible to get alongside the quay owing to the presence of a Norwegian ship, so that the aeroplanes, the Fokker and a Curtiss Oriole, had to be ferried across the ice at a great risk of total loss should the slightest breeze get up and so cause the ice to break up.

Finally the machine was erected, a runway prepared in the 4-5-foot deep snow, the best pair of skis fitted, the machine loaded up with 26-hours' fuel, food for 3½ months, and all the usual etceteras, farewells taken, but while taxying one of the skis broke. The second best pair of skis were put on, the same procedure as before gone through, to end this time by slewing round into a snowdrift. The third best set of skis were then fitted and again one of the skis jammed and the machine ran into the snow once again. Thereafter the crew were superstitious of saying good-bye and the 600-yard runway came to be known as the "Byrd Boulevard."

The machine was lightened by taking out four-hours' petrol and a lot of miscellaneous impedimenta. The fourth set of skis were clamped onto the third set to make them doubly strong, the crew working through the sunny night to get the machine ready. This time the personnel refused to say good-bye, but sneaked into the machine, a rope was tied round the tail-skid, the engines were opened up, the rope released, and the machine got off.

Once in the air, Commander Byrd found that a considerable amount of gear that he had eliminated had been surreptitiously put on board again, including a ukelele, a Jew's harp, and a pack of cards! Navigation was carried out with the aid of a sun compass which is reputed to be more reliable and enables a straighter course to be steered in the air than is possible with the magnetic compass on the sea.

Before reaching the region of the Pole a leak was discovered in the starboard oil tank, and the engine concerned was cut out, the machine flying successfully on two engines at 60 m.p.h. It was later discovered that the oil was leaking through a rivet hole, and as soon as the oil level fell below that the leak stopped, and the engine was restarted.

On reaching the estimated position of the Pole, the machine was flown round in gradually decreasing circles for 15-20 minutes and the return flight was begun. No flags were dropped, as Peary had already planted the American flag. The Polar Sea was seen as a waste of snow, and no land or life was discovered.

Commander Byrd claimed no personal pride in the accomplishment, but thanked the Good God who gave them the sun, and paid a very earnest tribute to Aviation in general and to Floyd Bennett, the pilot, and the 50 volunteers and sportsmen in particular.

Mr. Floyd Bennett said how pleased he was with the welcome they had received and said that all the credit should go to Commander Byrd who had worked so hard to organise the expedition and who had navigated the machine over the 750 miles to the Pole and back, and to Lieut. Noville, the engineer officer, who had ensured that the engines functioned properly. Under these conditions, the piloting was easy.

As regards the authenticity of their calculations, he claimed that had the navigation on the outward journey been in the slightest degree out, they couldn't have possibly navigated on the return journey to bring them dead over their point of departure, as happened.

Lieut. Noville also expressed his pleasure at the welcome and said that he could not elaborate on the story.

Lieut. Parker, who acted as spare pilot, but who, with Lieut. Noville, was left behind in the interests of economy in weight, said that the midnight sun under which everyone worked so hard reminded him of the song "After you've got what you want, you don't wont it." All the crew were anxious to see the phenomenon, but its presence completely upset their lives, as at no time did they know what particular meal they were supposed to be eating or when to sleep.

From Madrid to the Philippines.



Two of the "Breguet" machines, fitted with "Lorraine" engines, which left Madrid on April 5th and arrived at Manila on May 13th. The route was via Algiers, Tunis, Tripoli, Bengasi, Cairo, Amman, Baghdad, Basrah, Bushire, Bundar Abbas, Charbar, Karachi, Agra, Calcutta, Rangoon, Bangkok, Hanoi, Vinh, Saigon, Macao and Formosa.

Spanish Airmen use Shell Petrol & Oil at every stage of their 11,643 Mile Flight

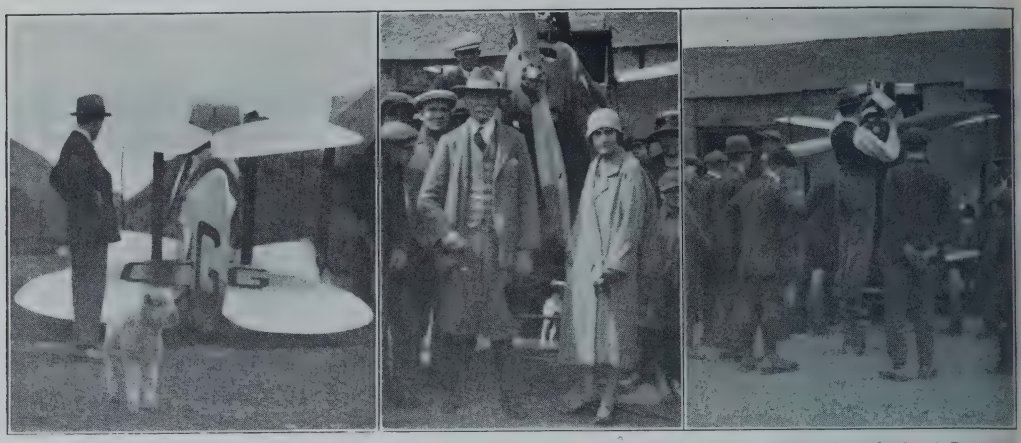
Before beginning their great flight from Madrid to Manila, Captain Loriga and Captain Gallarza, of the Spanish Army air force, made exhaustive tests of various petrols and oils. They finally chose Shell Aviation Spirit and Shell Super-Heavy Oil.

Their route took them over land, sea and desert, and lay wholly within tropical and semi-tropical zones. Under these climatic conditions, Shell Petrol and Shell Oil were both put to a severe test.

To get the last ounce of power from an aero-engine or a motor car, use the same combination which the Spanish airmen used —Shell Petrol and Oil.

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A HOLIDAY TOUR BY MOTH.



CHEATING THE HOLIDAY CAR OF ITS PREY.—(1) Col. Sempill and the inquisitive lamb. (2) Lord Portsmouth and Mrs. Sempill. (3) Filling and Folding at Moreland Bishop.

Lt.-Col. the Master of Sempill and the Hon. Mrs. Forbes Sempill do not like crowded roads. Also they like their Whitsun Holiday. Also they like touring. Therefore, to defeat the ferocious drivers of motor-cars which are let loose at such times, they find the air is the only safe place.

Having spoken nicely to the De Havilland Company they obtained therefrom a Moth (A.D.C.-Cirrus engine). On the Saturday morning they left Stag Lane and flew to Aberystwyth. (Please, Mrs. Sempill, next time you go for a tour choose places I can spell without looking them up in an atlas.)

On the way they landed in a field near Sherborne for petrol, having seen from the air that there was a garage near. At Aberystwyth the wings of the machine were folded and it was housed in an hotel garage.

On Whitsun Monday they flew down the Welsh coast, over the Bristol Channel, to Cornwall. They landed on the san at Instow and filled up at a garage nearby. Thence the flew to Exeter, landing in a field at Moreland Bishop, wher they were met by Lord Portsmouth.

The next day they flew to Cheltenham for lunch. Her they landed on Cleeve Common. In the afternoon they fle to Broadway in Worcestershire, where they spent the nigh

They returned to Stag Lane the following morning.

A total of 12 hours' flying was done, during which 8 miles were covered. 40 gallons of petrol and 12 pints of o were used. They did not use a single regular landing groun during the whole trip.

Col. and Mrs. Sempill are to be congratulated on addin another fine flight to the already wonderful history of th De Havilland Moth and the A.D.C.-Cirrus engine.—G. D.



A WHITSUN TOUR BY MOTH.—The two top pictures are at Borth (Cardigan) and the bottom one at Lord Portsmouth's place at Moreland Bishop (Devon).

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THE SCHOOLBOYS' ESSAY COMPETITION.

The de Havilland Aircraft Company write greatly regretting that there has been considerable delay in announcing the result of the Essay Competition which the firm organised in connection with the Schoolboys' Exhibition in January. Unfortunately, since the closing date of the Competition, Colonel the Master of Sempill, who had kindly consented to act as judge, has been in Greece on an important mission to the Hellenic Navy and was thus unable to complete the job of judging the essays.

Immediately on his return, Colonel Sempill set to work on the essays which have been submitted and he has now decided to award the prizes in the following order of merit :—

1st Prize.—Two half-hour flying lessons or a flight of one hundred miles on a de Havilland Moth : H. A. Richards, 520, High Road, Goodmayes, Essex.

2nd Prize.—Half-hour flying lesson or a flight over London on a de Havilland Moth : V. M. Hickson, 106, Chetwynd Road, London, N.W.5.

3rd Prize.—Joy-rides on a de Havilland Moth : L. G. Valpy, King's School, Canterbury, Kent, bracketed with K. G. I. Scott, Blinkbonny, Beechways, Gerrards Cross, Bucks.

In his letter communicating his decision, Colonel Sempill wrote :—

I think that the response that has come to your Essay Competition for boys under 18 is quite remarkable, and the high level shown by the bulk of the essays is really satisfactory. It has been somewhat difficult to decide the order of merit, as the four essays ultimately picked out for final placing are uniformly good.

Some of the remarks are particularly apt; for instance, L. G. Valpy says : "There are countless absurd regulations issued by the Air Ministry regarding the private ownership of aeroplanes; consequently at this time there are only four or five people in England who fly their private aeroplanes."

Again, K. G. I. Scott says : "Flying as a pastime does not appeal to the average member of the British public. He is very willing to watch (free of charge) any Flying Exhibition if it is to be really sensational, but at the end of the performance he goes away totally unimpressed with the safety of civil aviation, and still holding a strong desire to keep at least one foot on mother earth."

It is interesting to note that the great bulk of the essays submitted comes from boys living on or near the well-traversed air routes.

Owing to the high standard of all the essays submitted, the de Havilland Company have decided to extend the number of consolation prizes, and a mounted photograph of a de Havilland Moth (Cirrus engine) in flight will be posted in the course of a few days to every entrant.

REAL COMMERCIAL AVIATION.

According to the Toronto correspondent of the *Paper Trade Journal* of New York, forest fires in Ontario have been reduced in two years from an acreage of 2,000,000 to 10,000 by the flying boat forest patrols operated by the Ontario Government.

The Hon. James Lyons, formerly Minister of Lands and Forests for the Province of Ontario, has stated that in 1923 the fire loss in Ontario was 2,120,000 acres and that protection cost $1,000,000. In 1924 the loss was 146,000 acres and the cost was $865,000. In 1925 the loss was only 10,000 acres of timber land at a cost of $1,100,000, of which $300,000 was capital lost.

In 1924 the Ontario Government purchased thirteen H.S.2L. flying boats at a cost of $5,500 each, and operated a forest patrol service. Mr. Lyons stated that in 1923 the province lost about $8,500,000 in timber destruction through fires and in the two following years he estimated that the province saved $32,000,000 by operating the aeroplane fire patrols.

THE INSTITUTION OF AERONAUTICAL ENGINEERS

The paper by Capt. W. H. Sayers on "The Modern Theory of Aerofoils and its Application to Design," which was originally fixed for May 11 and postponed owing to the General Strike, will now be read on Tuesday, June 8, at the rooms of the Junior Institution of Engineers, at 6 p.m.

THE FLYING CLUBS.

The London Aeroplane Club.

The total flying time for the week was 41 hrs. 30 mins.

The following members had flying instruction :—Miss O'Bri G. Eady, J. H. Saffery, G. W. Hall, J. G. Links, J. C. Parkinson, Terry, G. Black, E. Cooper, Capt. G. T. Godfrey, N. J. Hulbert, E Moss, A. J. Richardson, J. A. Simson, H. R. Presland, R. C. Presla Major Beaumont, R. Malcolm, C. E. Murrell, G. Wallcousins, R. Banks, Miss Clode, A. H. Dalton, G. Quirk, O. J. Tapper, S. Bradshaw, K. V. Wright. O. J. Marstrand, G. H. Craig, L. J. Mitchell, A. Lees, B. B. Tucker.

The following members flew solo :—Sir John Rhodes, Bt., M K. M. Beaumont, W. Hay, E. S. Brough, A. Lees, G. Wallcous A. R. Ogston, N. J. Hulbert, G. H. Craig, W. Roche Kelly, R. Malco C. E. Murrell, A. H. Dalton, L. J. C. Mitchell, J. S. M. Michie.

On Thursday, May 27, the following members passed the flying t for their Aviators' Certificates :—A. R. Ogston, G. H. Craig, E. Brough, D. Kittel, Sir John Rhodes, Bt., N. J. Hulbert.

During the recent strike the two Club Moths were used for transport of newspapers. Their total flying time was 98 hrs. 25 m

The Club Ground Engineer, J. S. M. Michie, accompanied machines to the various bases and it is satisfactory to record t during the whole period of the strike the Club Moths were stantly flying and accomplished a distance of 6,609 miles.

The Yorkshire Aeroplane Club.

Report for week ending May 30 :—

When a Yorkshireman "taks hodden 'owt" he will usually m something of it. The Yorkshireman's pet rival is the Lancashire (*vide* last week's cricket result) and we fail to see why we sho not beat them in flying.

Thanks to very prompt treatment on the part of A.D.C. Aircr Ltd. and the de Havilland Co., one for despatching a new and re excellent engine at 24 hrs.' notice and the other for releasing th Mr. Beazor as our Ground Engineer, we have put in a fairish we marred only by a very showery week-end.

The ice in the solo direction, not the machine, was broken by D. D. Little on Thursday afternoon after 2 hrs. 55 mins. dual. news spread and Mr. Lax and Mr. McCalman came down hot-foot verify this. Mr. Lax made a determined effort and also got off after a total of some 8 hrs.' dual. Bad light, however, interfe with Mr. McCalman's first solo.

It was proposed to hold a display in connection with the Le Tercentenary Celebration, but it was found that the Leeds program was too full and the display has been postponed until later in Ju

Total flying time 17 hrs. 12 mins. Total dual 12 hrs. 47 mi Solo 1 hr. 55 mins. Joy-rides 2 hrs. 40 mins.

The following members had dual instruction :—Messrs. Barn Barraclough, Brown, Swift, Fowler, D D. Little, Lax, Wood, Fielden

Messrs. Fielden, Wood, D. D. Little and Lax flew solo.

The Newcastle-upon-Tyne Aero Club.

Flying report for week ending Sunday, May 30, 1926 :—

Totals : I.X, 7 hrs. 5 mins.; I.Y, 24 hrs. 45 mins., total flying ti 31 hrs. 50 mins.

The following members flew under instruction, with Ma Packman :—

Mrs. Marcks, Miss Leathart, Col. Sir Joseph Reed, Messrs. J. B Thirlwell, Shaw, George, W. Todd, Miesegaes, Bruce, Somervi C. Thompson, Twine, Stewart, Campbell, Phillips, Palmer and Dixon. Advanced dual, Mr. N. S. Todd.

Pilot members with passengers :—

Mr. W. Baxter Ellis with Mr. N. S. Todd, Mr. Walker, Mr. W. Waller, Mr. Munro Sutherland, Capt. H. J. Armstrong

On Saturday Mr. Ellis flew to Carlisle, bringing back Capt Ar strong, Hon. Auditor to the Club, to enable him to be present at General Meeting of the Club, the time for the return journey bei one hour fifty minutes.

Mr. P. F. Heppell flew with, as passengers, Mr N Easey and Ca W. H. Leete.

Mr. N. S. Todd with Miss Snowball, Mr. Twine, Mr. Callend Mr. Maden and Mr. J. Bell.

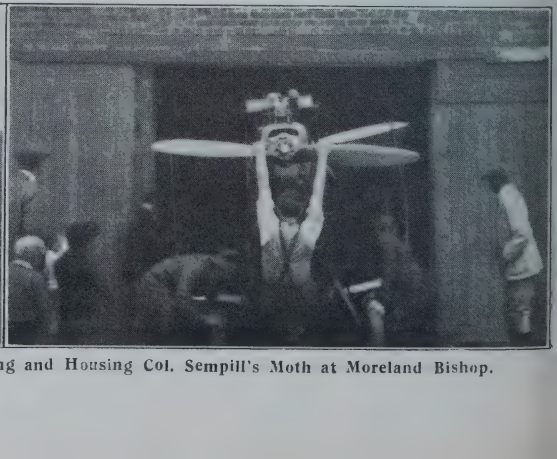
Mr. R. N. Thompson with Mr. Balfour, Mr. Lawson, Mr. Carr a Mr. Wilkinson.

The first Annual General Meeting of the Club was held in t Clubhouse on Saturday, May 29. There was a good attendance members. The President, Col. Sir Joseph Reed, presided, the rep of the Council being presented by the Chairman, Mr. W. Baxter El

The Presidents and Vice-Presidents were re-elected unanimously.

Major Graham was elected Hon. Auditor, vice Capt. Armstro and Dr. Eric C. Dagger was re-elected Hon. Doctor.





THE REAL LIGHT AEROPLANE.—Transporting and Housing Col. Sempill's Moth at Moreland Bishop.

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THE OXFORD UNIVERSITY AIR SQUADRON AT THE GLOSTER WORKS.

On Friday, May 28, the Gloucestershire Aircraft Co. Ltd. had the pleasure of welcoming to their Works the newly-formed University Air Squadron from Oxford. Wing Cdr. H. R. Raikes, the Chief Instructor of the Squadron, and Sq. Ldr. Graham Weir were personally in charge of the visitors, who arrived at Sunningend Works soon after mid-day where they were received by the Managing Director, Mr. David Longden.

After being entertained to lunch at the Lansdown Hotel they were conducted to the aerodrome at Brockworth where they witnessed a demonstration of the Gloster Gamecock. In spite of rather adverse weather conditions, Mr. Maurice Piercey successfully demonstrated the excellent flying qualities of this latest addition to the standard Air Defence Equipment of the country. The visitors were very impressed with the rapid climb of the machine, its wide speed range and perfect controllability in the air, as also with the general design and lay-out, which they studied with lively interest after the demonstration.

Returning to the Sunningend Works the Squadron was conducted in groups round the factory where they were able to see numerous Gamecocks in various stages of production.

Sq. Ldr. Graham Weir and Wing Cdr. Raikes are to be congratulated on the excellent material which they have to handle. Though their activities in the Squadron have so far been confined to the dismantling and assembling of a machine, the keen interest and enthusiasm which the men displayed made it a pleasure to conduct them through the factory. Their keenness may be measured by the fact that with one single exception, unavoidably due to the imminence of exams., the whole Squadron turned up twenty-four strong. Three of them are rowing men who had to hurry back to get on the river by 6 p.m.

One feels that with men of this stamp the University Air Squadrons should prove as valuable an asset to the Air Force as the Officers' Training Corps proved in the Great War to the Army. One wishes the Oxford University Air Squadron the success which their keenness and enthusiasm deserves.

MR. LANCHESTER AT THE AERONAUTICAL SOCIETY.

At a meeting of the Royal Aeronautical Society on Thursday, May 27, Mr. F. W. Lanchester was presented with the Gold Medal of the Society in recognition of his pioneer work in the science of aerodynamics.

Sir Sefton Brancker, President of the Society, in making the presentation, said that the gold medal had previously been presented to only five persons, among whom were numbered Wilbur and Orville Wright. The last presentation had been made in 1915, and, having come to the conclusion that recent advances in aerodynamic science warranted a further award of this honour, the Council had unanimously came to the conclusion that Mr. Lanchester was the person most entitled to it, for his work in laying the foundation of the modern theory of aerofoils.

Originally Mr. Lanchester had been among the prophets without honour in his own country, but it was now recognised that his work was of the first importance.

After the presentation Mr. Lanchester read the annual Wilbur Wright Memorial lecture. The title of the paper was "Sustentation in Flight," and the subject a review of the theory of the aerofoil originally developed by the author as long ago as 1894, and propounded in a remarkably complete form in his volume "Aerodynamics," published in 1911.

The paper was read in abstract, no copies thereof are available, and the subject is necessarily of some complexity, and it is not possible in this notice to give a *précis* of even Mr. Lanchester's abbreviated version that would be useful illuminative. One point of very definite interest may ho ever be mentioned, and that is the precise manner in whi the author was led to the recognition that the circulati round the aerofoil was the essential factor in producing li

In the first place he was led to consider the possib motions of the air round a loaded aerofoil. By a process exhaustion he arrived at a picture of one possible and pr able type of such motion. After this had been done he rec nised that this particular type of motion bore a very great semblance to that which according to classical hydrodynam theory would result from the combination of circulati around the aerofoil with translation past it. And hyd dynamic theory proved that such a combination would count for lift.

PARIS—TOKYO FLIGHT ABANDONED.

Capt. Pelletier Doisy, who left Paris on May 25 on a Pot XXV biplane (450 h.p. Lorraine-Dietrich engine) in an tempt to fly to Tokyo in eight stages, via Russia, has be compelled to abandon his flight after covering only o stage. In attempting to take off from Warsaw aerodrom the wheels of his machine sank into a badly-filled tren which had been dug during the recent Pilsudski *coup d'é* and the machine was damaged beyond repair. Neither Ca Doisy nor M. Carol, his engineer, was hurt.

COPENHAGEN—TOKYO.

On May 25 Lieut. Botved, the Danish military aviator, w is attempting to fly from Copenhagen to Tokyo on a Fokk C.V biplane, left Peking for Mukden, where he arrived safe later in the day.

On May 28 he was reported to have arrived at Hai Korea.

On May 29 he left Haiju for Taikyu, Korea. On landi at the latter place he damaged his airscrew, which will ent a slight delay while repairs are being made.

ROTTERDAM—MARSEILLES NON-STOP

On May 28, M. Grasé, chief pilot of the Fokker Compar flew from Rotterdam to Marseilles non-stop, carrying m for the Dutch East Indies, in a Fokker commercial mor plane. He left Rotterdam at 03.30 hours and arrived at M seilles at 10.00 hours in time to catch the mail boat which l at 12.00 hours.

The total distance, 610 miles, was covered in 6½ hours.

U.S. AIRCRAFT CARRIERS.

The U.S.S. *Lexington* and *Saratoga*, now completing, w be commissioned as flag-ships of the Aircraft Squadrons the Scouting Fleet and Battle Fleet respectively, early ne year.

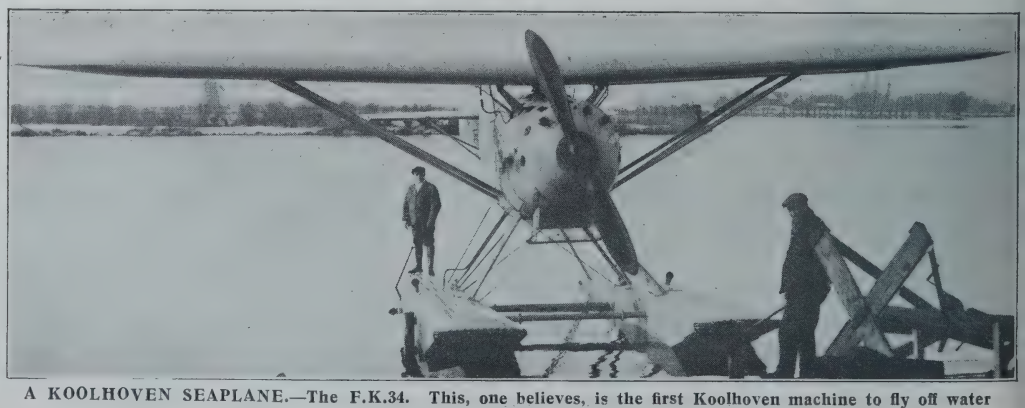
The U.S.S. *Wright*, now with the Scouting Fleet, will to China to relieve the U.S.S. *Jason* as tender for the Aircr Squadrons of the Asiatic Fleet and the U.S.S. *Langley*, n with the Battle Fleet, will form with the U.S.S. *Jason* a *Aroostook* an Aircraft Squadron with the Pacific Fleet Ba Force.

THE KOOLHOVEN F.K.34.

Lieut. Van Vloten, of the Dutch Naval Air Service, h recently carried out preliminary tests with the Koolhov F.K.34 seaplane. The F.K.34 is a modification of the n well-known F.K.31. It is fitted with the 450 h.p. Hispan Suiza engine, a different shaped fin and a larger rudder. T twin floats are very long and of the streamlined single-st type. They are attached to the fuselage by two sets of "N struts of steel tubes.

The engine is completely cowled-in, the radiator being the retractable Lamblin type mounted under the fuselage.

After the preliminary tests, during which the machi showed a speed of 200 km.p.h., Lieut. Van Vloten made two-hour flight over Amsterdam and the Zuider Zee.



A KOOLHOVEN SEAPLANE.—The F.K.34. This, one believes, is the first Koolhoven machine to fly off water since the big Deperdussin of 1913.

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Extract from :–

OFFICIAL REPORT.

Parliamentary Debates

HOUSE OF COMMONS.

VOL. 192. No. 18. THURSDAY, 25th FEBRUARY, 1926.

"The SECRETARY of STATE for AIR (Sir Samuel Hoare): Last year the Air Force carried out a series of remarkable long-distance flights in the neighbourhood of the British Isles. Here are one or two of them. On 24th September, five Vickers' Virginias, from No. 9 Bombing Squadron, flew from Manston, in Kent, to Leuchars, the most northerly air station in the British Isles, and back to Manston in a day, a distance of 870 miles. A second flight was undertaken by eight Vickers' Virginias from Worthy Down, in Hampshire, again to Leuchars, on 3rd September. Although the weather was very bad three of the machines flew from Hampshire to Edinburgh and back without landing.

Lieut.-Commander BURNEY: With full service load.

Sir S. HOARE: Yes, with full service load, and as an ordinary service exercise, and not in any way as a stunt. They flew a distance, of about 800 miles, spending as much as 12½ hours continuously in the air





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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 20; Tuesday, 21; Wednesday, 23; Thursday, 23; Friday, 17, Saturday, 26; Sunday, 9

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 66, passengers 384, freight 17 tons.

AIR UNION:

Paris—London: Machines 42, passengers 200, freight 11 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 54, freight 2 tons.

SABENA:

Brussels—London: Machines 12, passengers 35.

DEUTSCHE LUFTHANSA A.G.:

Berlin—London: Machines 9, passengers 28.

SPECIAL: Nil.

Total number of trips by British Machines, 66, carrying 384 passengers. Foreign Machines, 73, carrying 317 passengers

Comparative Figures:

Week ending May 30:

Machines, 139; Passengers, 701; Crews, 181; Total personnel, 882.

Corresponding week, 1925:

Machines, 135; Passengers, 555; Crews, 173; Total personnel, 728.

Corresponding week, 1924:

Machines, 82; Passengers, 321; Crews, 130; Total personnel, 451.

Corresponding week, 1923:

Machines, 103; Passengers, 285; Crews, 168; Total personnel, 453.

Corresponding week, 1922:

Machines, 150; Passengers, 339; Crews, 207; Total personnel, 546.

Corresponding week, 1921:

Machines, 85; Passengers, 339; Crews, 101; Total personnel, 440.

Corresponding week, 1920:

Machines, 89; Passengers, 126; Crews, 100; Total personnel, 226.

Croydon Notes.

There are, one hears, all sorts of wonderful schemes on hand for making a second aerodrome at Croydon in five years if occasion warrants. An enormous amount of money is now being spent in building the new aerodrome sheds and offices along the new Brighton Road. This of course is absolutely necessary, and it would seem natural that when this becomes too small it can be extended along the Brighton Road and along the Sutton Road.

Such a simple expedient does not commend itself to the Bright Beings in the Air Ministry. Apparently the Brightest of Beings (whoever that may be) has ordained that a second aerodrome shall be constructed at enormous cost in the North-West corner of the completed aerodrome, that is to say right over in the Wallington corner beyond where the airship mooring mast used to be.

It will be miles away from the other part and the only advantage which one can see in the idea is that the Air Ministry will be able to subsidise an air line to run between the two parts.

One is told that one is to be the Arrival side and the other the Departure side. This seems particularly bright, for at least half the passengers who wish to depart will go first to the Arrival side and those meeting their arriving friends are bound to go in large numbers to the Departure side. For it is human to err, though to err may not be official.

Another point is that the corner where the other sheds are to be is bounded by much population, whereas the corner where the present sheds are being built is comparatively open. Erecting sheds and running up engines all day in the populous part is not likely to improve the locality and it seems that the population of Wallington will be able to proceed *en masse* against the Air Ministry for compensation.

If on the other hand people build houses near where the sheds are already being built they know what they are in for and have only themselves to blame.

Also having two aerodromes widely separated means doubling Customs, offices, officials, telephones and muddle.

"And that," said John, "is that."

The two-seater A.N.E.C. light aeroplane is at the aerodrome, whither it flew from somewhere or another lately. One gathers that it is on the way to Brooklands and is delayed with engine trouble.

The Vickers Vanguard (two Rolls-Royce Condors) has been disturbing the air of Croydon again lately, though one does not know for what reason. Perhaps the long-threatened night flying is to begin soon.

Lt.-Col. Minchin will leave Croydon on the first day on which there is a reasonable 48-hr. forecast, and will attempt to fly to Cairo in two days. He will fly on the Bristol Bloodhound with the same 450 h.p. Bristol Jupiter VI which completed 25,000 miles without a single part being replaced. On the first day he will fly to Taranto, stopping at Dijon and Pisa for fuel. The next day he will go to Cairo via Athens and Sollum. The flight may be extended beyond Cairo if conditions are suitable.

Sir Sefton Brancker travelled by K.L.M. Fokker to Ostende on Friday to attend a conference of some kind. Unfortunately a new F.VIIa (Jupiter) was not available at the time so he went in an old F.VII.

At A.D.C. Aircraft Ltd. Mr. Perry has been testing the Nimbus-Martinsyde, which for some reason has been unfrocked of its name (Boreas). Mr. Frank Courtney has been flying the Martinsyde A.D.C.1 during the week.—G. D.

Franco-German Traffic Renewed.

On May 26 two Farman F.170 monoplanes left Le Bourget for Berlin and one Junkers G.23 monoplane left Berlin for Paris, thus opening up air traffic between France and Germany as the result of the removal of certain restrictions on German aviation.

The new line, Paris—Cologne—Essen—Berlin, will be operated jointly by the Deutsche Lufthansa and the Farman Company.

As the result of commercial negotiations between representatives of the French and German air lines following on the lifting of air transport restrictions, the Cie. Internationale de Navigation Aérienne, which has hitherto been compelled to avoid German territory on its Paris—Prague—Budapest—Belgrade—Bucharest—Constantinople service by flying via Zurich and Vienna, will now run via Strasbourg and Nuremburg to Prague.

From Prague a connection will run to Warsaw via Breslau. The new arrangements came into force on May 26.

New French Lines.

On May 25 the Air Union inaugurated two new air lines, Paris—Lyons—Marseilles and Paris—Lyons—Geneva, when six machines left Le Bourget for their various destinations. Among the passengers carried were M. Laurent Eynac, the French Under-Secretary of State for Aeronautics, M. Louis Bréguêt, and M. Jacques Bréguêt.

Flying at Roehampton.

The programme of forthcoming arrangements by the Roehampton Club includes a "Flying Day" on July 17 from 2.30 to 4.30 p.m.

The programme states that the Royal Aero Club is arranging a special exhibition of Flying Events and that free passenger flights will be ballotted for during the proceedings.

The Royal Air Force Band will play during the afternoon

A Good Advertisement.

The Hoyt Metal Company of Great Britain Ltd., of Deodar Road, Putney, S.W.15, have just issued a leaflet advertising the success of Hoyt No. 11 Anti-Friction Metal in the main bearings of the 450 b.h.p. Bristol Jupiter engine which recently did a 25,000-mile flight without attention under official observation, and in the Jaguar engine used by Mr. Alan Cobham in his 16,000-mile flight to the Cape and back.

The compiler of the leaflet deserves to be congratulated on the excellent way in which he has displayed his facts and photographs. One strongly recommends the advertisement department of all aircraft firms, if they have not already received the leaflet, to get a copy and study it as an example of how to attract attention and drive home facts.

Apart from the ability with which the advertisement is arranged the essential facts which stand out are of considerable interest. In the case of the Jaguar the bearings, carrying 385 h.p., showed no sign of wear after 16,000 miles, most of it in tropical heat, when lubrication trouble might have been excusable. From the bearing-load point of view the Jupiter performance is even more remarkable, because in that case there was only one connecting-rod big-end bearing which had to carry the whole of the 450 horse power developed by that exceptionally fine engine the Jupiter Mark VI.

Undoubtedly Hoyt No. 11 has proved itself to be a remarkable material, and it is not surprising that it should now have its own particular market practically to itself.

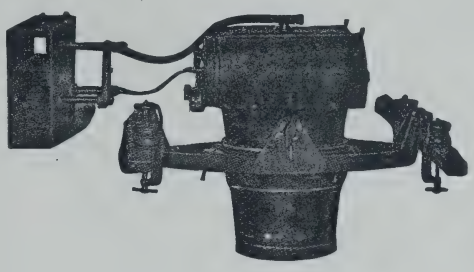
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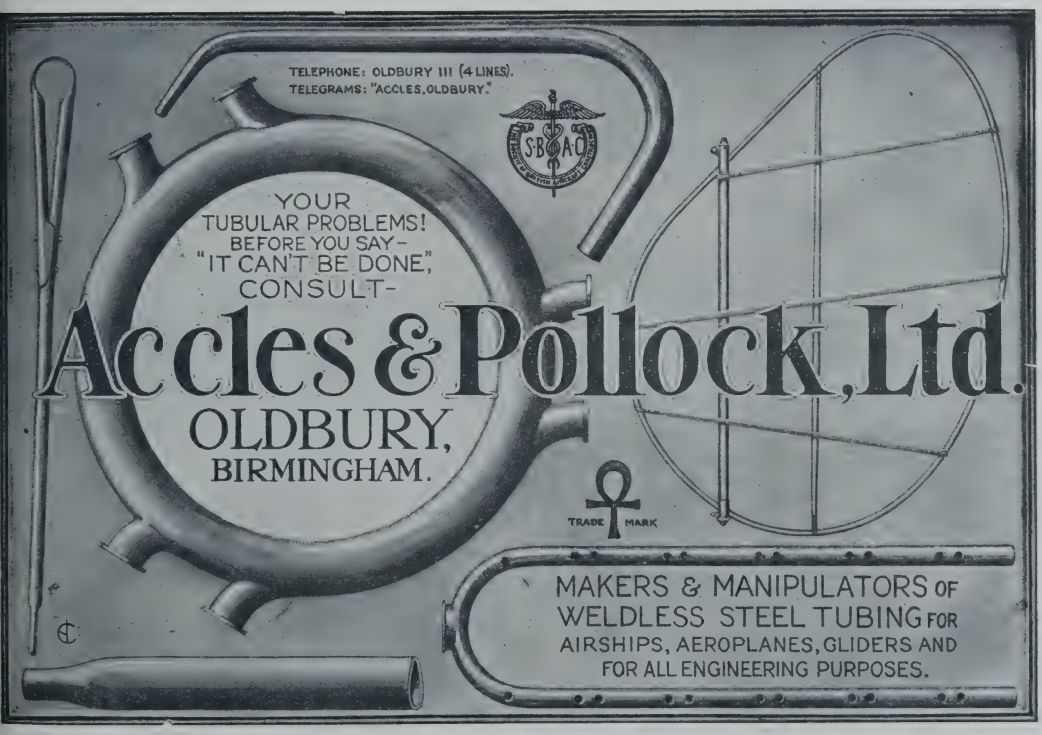
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BRITISH METAL AIRSCREWS.

The Fairey Aviation Co. Ltd. have received an order for Fairey-Reed all-metal airscrews from the Dornier Company of Italy who are building a flying boat for the Marchese di Pinedo. It is interesting to note that the specifications made it quite impossible to use wooden airscrews on account of the very high tip-speed required.

Following highly successful tests which resulted in the top speed and cruising speed being above the makers' expectations, a further order has been placed. It is satisfactory to note that these orders were obtained in competition with other airscrews of a similar pattern made by French and German companies. In spite of the fact that their price was higher, the British Company obtained the order on account of the very extensive experience they have had in the design and construction of these airscrews, resulting in a superior performance.

As a further result the Fairey Aviation Company have received orders from other Italian companies for a supply of these airscrews.

Among the list of notable flights which have been made with aircraft using Reed airscrews may be mentioned the following :—Commander Byrd's flight from Spitzbergen to the North Pole and back. Capt. Wilkins' Polar Expedition flights. Lieut. Medaerts' flight to the Belgian Congo and back to Brussels (a total distance of 11,400 miles).

A Fairey-Reed Airscrew is to be used on Mr. Cobham's forthcoming flight to Australia and back.

THE ROYAL AERONAUTICAL SOCIETY.

A visit by the Students' Section of the Royal Aeronautical Society to the Royal Aircraft Establishment, Farnborough, which was postponed owing to the General Strike, has been re-arranged for Wednesday, June 16. Those proposing to take part will meet at the Main Line Booking Office, Waterloo, at 10 a.m., unless other arrangements are notified in the meantime.

The Society's examination for Associate Fellowship will be held on Sept. 20 and 21, provided sufficient entries are received. The latest date for receiving entries is Monday, Aug. 23.

THE EMERGENCY ISSUES.

Readers of THE AEROPLANE who for one reason or another missed getting copies of the two emergency issues of THE AEROPLANE of the dates May 5 and May 12, or who would like one or two extra copies as souvenirs, can have them on application to the editorial office of THE AEROPLANE.

A good many people who have seen these issues in the hands of other people have written asking for copies, so presumably there are others in similar case.

WANTED—A TWO-SEATER.

A reader of THE AEROPLANE is anxious to know of anyone who has an old Avro or a D.H.6 to sell cheap, with an 80 Renault or Raf engine. He wants to get hold of an old machine and fix it up for himself. If any readers know of such a thing will they please communicate with the Editor of THE AEROPLANE?

WHALE-SPOTTING IN CANADA.

It is reported that the Consolidated Whaling Corporation, of British Columbia have purchased a Boeing seaplane for the purpose of assisting the Corporation's whaling fleet in the northern waters during the coming season. The machine will operate from Rose and Naden harbours, the Corporation's bases on Queen Charlotte Islands. A Mr. Reece (late R.A.F.) has been engaged as pilot and he is at present engaged in fitting out the machine at Seattle prior to flying direct to the northern base to meet the fleet of whalers which left their home base on May 1.

PERSONAL NOTICES.

MARRIAGES.

BOX—GREY.—On May 29, at Vancouver, B.C., Barnard Box, of Vancouver, formerly of 41 and 61 Sqdns., R.F.C., and 112 Sqdn., R.A.F., elder son of the late James Harold Box and Mrs. Collier, of Runcton, Sussex, to Constance, elder daughter of Ralph Geoffrey Grey and Mrs. Grey, of 905, Thirteenth Avenue West, Vancouver, B.C., niece of C. G. Grey, and grand-daughter of the late Charles Grey Grey, formerly of Dilston Hall, Northumberland, and Chief Court Valuer in the Irish Land Commission.

WALKER—WEBBER.—On May 15, at St. Mary's Church, Kasr-el-Doubara, Cairo, Flt. Lt. Gerald Gladstone Walker, M.C., to Norah Frances Webber.

FORTHCOMING MARRIAGES.

BAKER—ROBINSON.—The marriage of Sq. Ldr. B. E. Baker and Miss J. D. Robinson will take place at Annan on June 10.

RILEY—VAN OS.—The marriage between Alan Incell Riley, A.F.C., R.A.F., son of Mr. George Riley, of Clacton, and Ella Adele, daughter of the late Mr. S. G. van Os. and Mrs. van Os, of 59, Edith Road, Kensington, W.14, will take place at St. Mary Abbots Church, Kensington, on June 19.

BIRTHS

CLOETE.—On May 31, at 27, Welbeck Street, W.1, to Marjorie, wife of Sq. Ldr. D. Cloete, R.A.F.—a daughter.

FODEN.—On May 7, at Hill House, Christchurch Road, Winchester, to Rosalind, wife of Flt. Lt. J. C. Foden, A.F.C., R.A.F.—a son.

ST. JOHN.—On May 26, at Heylands Court, Lee-on-Solent, to Elsie, wife of Flt. Lt. H. W. St. John, D.F.C., R.A.F.—a daughter.

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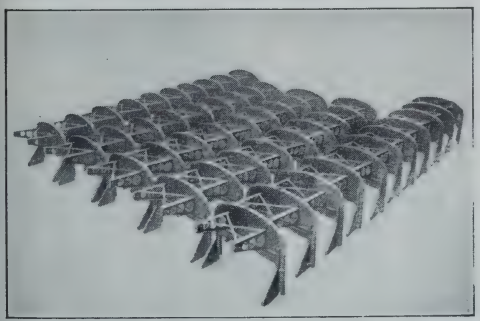
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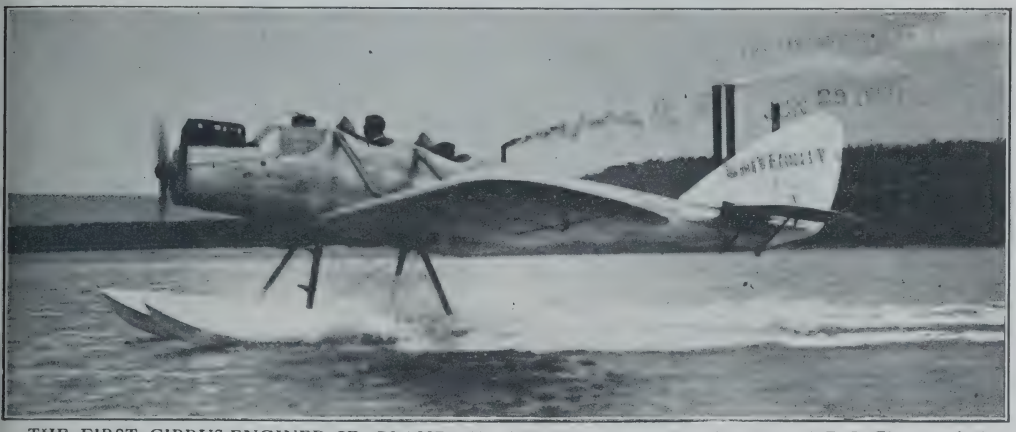
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ANOTHER "SHORT STORY."



THE FIRST CIRRUS-ENGINED SEAPLANE.—The Short Mussel monoplane (27-60 h.p. A.D.C. Cirrus engine) about to take-off the Medway at Rochester. In spite of the fact that on the preliminary tests the engine was not giving its full r.p.m., the estimated performance of the Mussel was exceeded. The fuselage and floats are of typical Short all-metal construction.

K.L.G

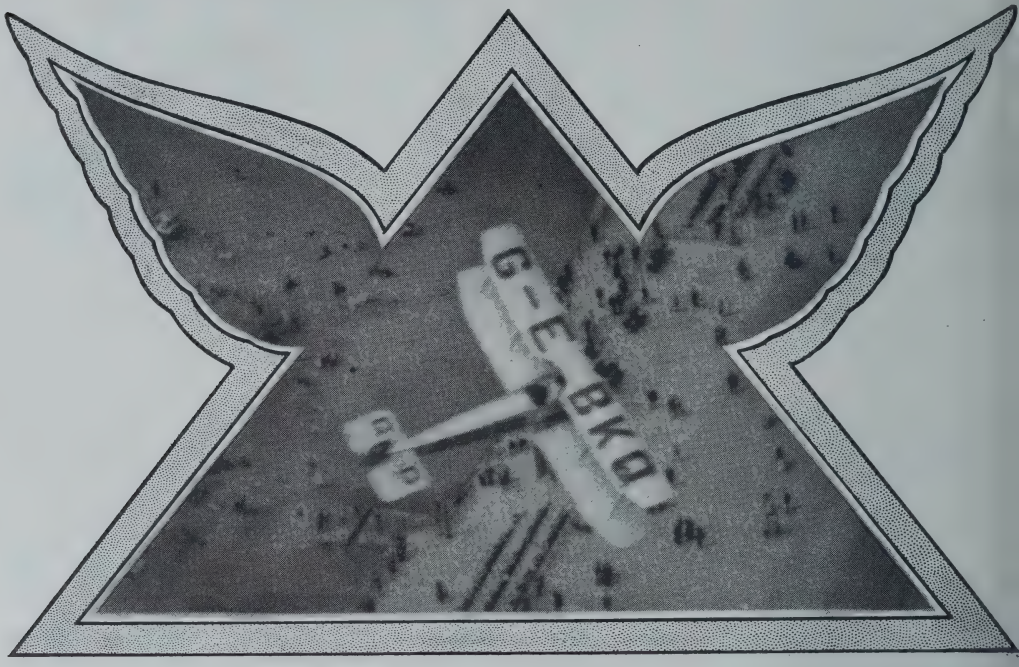
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JUNE 9, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 23.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months, 32s. Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8s. U.S.A., 1 Year, $8 50c.

ON CURRENT EVENTS.

RENOVATING THE AIR LEAGUE.

Regular readers of THE AEROPLANE will remember that for many years past one's duty to British Aeronautics has compelled one to criticise adversely the activities of the Air League of the British Empire. Many of those concerned with the Air League have done their best under extremely difficult circumstances to make the League do for our Air Power what the Navy League did for our Sea Power in the years before 1914. But they have been so hampered by the inertia of well-meaning but ineffective Councils and Committees and so forth that they have been unable to produce any appreciable movement.

In his own quiet way Mr. Douglas Gordon, the Secretary of the League, has been steadily increasing the membership during the past few years and the League is by no means in a bad way financially. But it has not yet become the public and political force which it should be.

Now at last the Executive Committee of the League, moved by the advent of new committee-men, and perhaps inspired by a species of mass psychology such as results in the right movement taking place at the right moment, have invited members of the other aeronautical associations in this country to join them in investigating the position of the League in the hopes of discovering a more effective means of making the Air League a living force.

With that idea in view the Royal Aeronautical Society, the Royal Aero Club, and, one believes, the Society of British Aircraft Constructors, have been invited to nominate representatives to a joint Committee of Investigation whose duty it will be to suggest methods of revising the administrative machinery of the League and of bringing in persons, personalities or personages who are likely to "get a move on," if one may be pardoned the use of the slang term.

One gathers that this Committee will welcome constructive criticisms from all and sundry. So one suggests that anybody who has any views on the subject should send them along to Mr. Douglas Gordon, The Air League of the British Empire, 26, George Street, Hanover Square, W.1, in the assurance that they will be brought to the attention of the Investigating Committee.

Undoubtedly the Air League has great opportunities. Its reason for being is primarily to make the people of this country air-minded, as Sir Samuel Hoare puts it. And with a real live policy put into operation by men who are thoroughly enthusiastic and are at the same time competent organisers the Air League may very well do good work in assuring the future safety of this nation.—C. G. G.

THE ABANDONMENT OF THE PULITZER TROPHY CONTEST.

The National Aeronautic Association of America announces that the Contest for the Pulitzer Trophy Contest will not take place this year. Both the U.S. Army and the U.S. Navy decided not to enter for the contest, and as, apparently, the U.S. Aircraft Industry is in no better state than our own to pay out of its own pocket for the building and flying of racing machines there was nothing for it but to cancel the competition.

Aviation, New York, says that the Public will feel disappointed and that there is no doubt that the Pulitzer Trophy has done an immense amount of good in times past and it has been an incentive to aerodynamic and structural development. The speeds of over five miles per minute which have



KILLING THE GOOSE.—How our Technical Experts kill performance. A Hawker Woodcock (Jupiter engine), a high altitude interceptor fighter, made into a Christmas tree with gadgets.—Bombs under wings, landing flares under wing-tips, navigation lights on top of wing-tips and rudder, guns on outside brackets, and so forth—enough to knock 25 miles an hour off the speed of a very fine aeroplane.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

been reached during the race have focussed the eyes of the nation on the National Air Meets. But, *Aviation* thinks, the times have changed, and the great speed classic seems to have achieved its purpose.

Commenting on this idea, *Aviation* says :—

The design of pursuit planes has not yet caught up to the standards set by the speed planes, in fact it is not impossible that the speed has been reached beyond which it is humanly possible [Evidently a mis-print for impossible.—C. G. G.] to manœuver a plane and still retain consciousness. Also, the limit in streamlining and a possible minimum of frontal area for a given engine power, may have been more or less reached, so that no spectacular increases in speed can be hoped for until some radically new departure is adopted.

With these sentiments one is partially in agreement but still more in disagreement. It is quite possible that pilots might become unconscious if they attempted rapid manœuvres at speeds greater than those already reached, in fact the majority of pilots would probably become unconscious at much lower speeds, seeing that the American speed pilots are all picked men accustomed to manœuvring at these high speeds.

But it should certainly be possible to achieve still higher speeds with pursuit planes and yet have those planes quite manœuvrable at much lower speeds. That is to say, it should be possible to build a pursuit ship with a speed of somewhere betwen 250 and 300 m.p.h. and yet design it so that it can be manœuvred quite sufficiently at 150 m.p.h.

Nobody expects a 300-m.p.h. pursuit ship to be used for dog-fighting. But it should be possible to get it round a fairly sharp corner. Apparently the Editor of *Aviation* has not quite grasped the idea that the pursuit ship is a vehicle entirely different from the manœuvrable fighting machine.

On the other hand one is inclined to think that somewhere about 300 m.p.h. is probably the limit with aeroplanes and engines designed and constructed along existing lines. But surely the continuance of contests such as those for the Pulitzer and Schneider Trophies is advisable in the hopes that competition for them may lead to the discovery of that radically new departure which will raise our speeds still further.—C. G. G.

A PARACHUTE TEST.

On June 1, M. Navarre, a French parachutist, jumped from an aeroplane piloted by Mr. Alan Cobham while flying at a height of only some two hundred feet over the Welsh Harp at Hendon. The parachute opened promptly, and M. Navarre, who was clad in one of the *mousse* rubber flying suits invented by Major H. H. Evans and described recently in THE AEROPLANE, descended into the lake where he floated comfortably until picked up.

The parachute used in this demonstration was invented by M. Courtin and M. Navarre. The drop was done from two hundred feet in order to show how quickly the parachute would open.

This parachute is of the " static " type which is opened by the weight of the parachutist pulling the parachute out against the pull of a line fixed to the machine. Therefore, as one remarked to Major Evans when discussing the performance with him a day or two before it took place, this particular type of parachute is useless for Service purposes except perhaps for dropping spies over enemy territory.

A writer in *The Daily Telegraph*, whom one cannot believe to be Major C. C. Turner, says :—

" It has the advantage, as compared with the Irving parachute, of not needing any operation by the user. With the Irving, the wearer must, immediately he has begun to fall from the aircraft, pull a cord, which opens the parachute; and this is by many regarded as a drawback."

If in fact, the static type of parachute had any advantage over the free type, Mr. Calthrop's " Guardian Angel " parachute would have been adopted as standard for the Royal Air Force long ago, and nobody would have ever heard of the Irving. One has yet to meet anybody by whom the operation by the user of the free type parachute is " regarded as a drawback."

In any case, if anybody wants to use a static line release, as for example in dropping spies or in dropping passengers for some specific reason, the Irving parachute and the Holt, which has been recently discussed in this paper, can be worked just as well with a static line attached to the machine as they can by the self-release method.

Apparently the great advantage claimed for the Courtin-Navarre parachute is that it opens very quickly, owing to the method of packing. If Major Evans will provide a demonstration of this parachute arranged to work as a free parachute and if it then opens as quickly as does the Irving or the Holt, one will be glad to go and see it. But it is mere waste of time for anybody to give any attention, in these days at any rate, to the static type of parachute.

The writer in *The Daily Telegraph* distinguishes himself still further by saying,

" This parachute, as used yesterday, needs no pilot, or shock-taking, parachute, but, like all parachutes, is provided with rubber shock absorbers in the suspension."

This is the first time that one has come across the idea that the pilot parachute, which is used to draw the main parachute from its case, as is the method in all reliable free parachutes, is intended to act as a shock-absorber of any kind.—C. G. G.

AN AERIAL RALLY AT OSTENDE.

The Royal Aero Club of Belgium are holding an Aerial Rally at Ostende on June 26 to 28, 1926, and have asked the Royal Aero Club of Great Britain and Ireland to participate.

The Programme is as follows :—

June 26.—Reception at the Aerodrome, Ostende, 2 p.m. to 5 p.m. Dinner at Hotel Splendid, Ostende. Gala Evening at the Kursaal.

June 27.—Reception at the Hotel de Ville by the Burgomaster. Luncheon at the Hotel Splendid, Ostende. Flying Competitions at the Racecourse, Ostende. Dinner at the Hotel Splendid, Ostende. Gala Evening at the Kursaal.

All wishing to attend must travel by air and arrive at the Aerodrome between 2 p.m. and 5 p.m. on Saturday, June 26, 1926.

The whole charge is 300 frs. (£2) which includes accommodation at the Hotel Splendid and all meals.

Members and others interested are requested to communicate with the Secretary, the Royal Aero Club, 3, Clifford Street, London, W.1.

A communication from Mr. Handley Page, who has been appointed *Commissaire Sportif* for Great Britain by the organisers of the Rally, adds to the foregoing information that the 300 francs includes :—

(1) Free landing and housing at the aerodrome.



A CLIMBER.—The X-C.O.5-A, developed by the U.S. Engineering Division, McCook Field, Dayton, Ohio, for an attack on the height record at present held by M. Callizo at 39,576.48 feet. The machine is fitted with a 400 h.p. Liberty engine and a General Electric side-type supercharger. The total wing area is 600 sq. ft., the wing section is Joukowsky 27 A and the aspect ratio is 10.

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Cairo to Cape Town and back

Another Napier Achievement!

Writing on the feat accomplished by four Royal Air Force Fairey-Napier machines in flying from Cairo to Cape Town, the "Navy" in its issue of May 1926 says—

CLEARLY the fact that four machines have accomplished this journey under the difficult conditions which exist in the tropics, and without experiencing any mechanical troubles, is a striking testimony to the reliability and general air-worthiness of British aircraft and aero engines. The element of luck may assist a single machine to accomplish a difficult and arduous aerial voyage, but when a flight of four aircraft perform the same feat efficiency and reliability is proved.

This success, in which four Napier Lion water-cooled engines participated, indicates that for hard work under trying conditions it will be difficult to find a motor capable of improving upon the all-round efficiency of the Napier.

Make certain of obtaining the best all-round performance from your aeroplanes by installing the—

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(2) Free transport to and from the aerodrome.

(3) Hotel accommodation at the Hotel Splendid, including bedroom on the 26th and 27th, dinner on Saturday, breakfast, lunch and dinner on Sunday, and breakfast on Monday.

(4) Free entry to the Casino, " where those who are blessed by the god of Luck may win back their 300 frcs., and much more! Others not so blessed may lose as much—or more than they care to do."

(5) On Sunday entry to various receptions, and to a Meeting and Flying Competition over the Racecourse. There will be no horse racing, as the season does not open for horse racing until later in the year. The Competition will be solely confined to aircraft.

There has been some suggestion that there should be also free entry to the Golf Course, but it is not said that this is included. In any case it is an exceedingly small fee, and quite a good course. Altogether—especially for those who are lucky at roulette or chemin de fer, a very pleasant week-end at a very small price.

The Belgian Aero Club would like to know as soon as possible as to the number of intending visitors, so that they may reserve sufficient hotel accommodation. One thing to remember is, that visitors must travel to Ostende by air.

THE JUNKERS GIANT.

Since the recent agreement between Germany and the Allied Powers which virtually removed the restrictions of the Treaty of Versailles on the production of German civil aircraft, there have naturally been a number of rumours as to the remarkable machines which the German constructors will produce in the near future.

One rumour of a particularly substantial nature alleges that the Junkers Werke of Dessau have actually started work on a " giant air liner " designed to carry a hundred passengers or the like. This particular machine is described in some considerable detail and with a verisimilitude which proves that it is not merely a figment of the imagination of some active " special correspondent."

Whether in fact the Junkers Werke propose to lay down a machine of the type suggested is not known, and is not likely to be known for some little time. But it is known that Dr. Junkers is a firm believer in the possibility and the utility of very large civil aircraft. Tentative designs, worked out in some considerable detail for a machine of a size such as that mentioned in the rumour aforesaid were published within a year or two of the end of the War 1914-18.

This machine was to be an enormous cantilever monoplane with a wing of such thickness that the whole of the passenger and luggage accommodation was provided inside the wings. The load was to be distributed not fore and aft along the centre line as in modern machines, but across the span of the wings itself.

The whole of the power plant and fuel and oil were likewise to be distributed along the span of the wings. To make it possible to put the engines right within the wings and so avoid unnecessary drag, the engines were to be of the horizontally-opposed type. And, to reduce both the cost and the weight of fuel carried, these engines were to be of the heavy-oil compression-ignition (usually called Diesel) type. And as the power required for such a machine was necessarily large, the engine units were to be of very large output—1,000 to 2,000 h.p. per engine.

The general type of machine has been in Dr. Junkers' mind for many years. The original patents covering the particular form of wing construction used by this designer, which were taken out either before or in the earliest stages of the War 1914-18, described the application of this construction to a machine generally of this type. And the Junkers machines which have up till now been built have been regarded by Dr. Junkers to a very large extent as steps towards the practical development of very much larger machines possessing the features above mentioned.

Since the end of the War at least one serious attempt has been made by the Junkers firm to build a monoplane of a size much larger than any yet built, but even this, as far as can be gathered, was only an intermediate step between the present type and the real giant machine which he hopes to produce.

It is also well known that certain very promising experiments have been made with an engine of the type which is considered by Dr. Junkers best to conform with his idea of the giant aeroplane.

Under the circumstances there is little or no room to doubt that Dr. Junkers will very actively embark on the experimental development of very large aeroplanes, and that he will try very hard indeed to bring the 100-seater 4,000 h.p. machine into being in the near future.

But it is very unlikely that an engineer who has shown so much patience and perseverance in the past will attempt to jump at once to the construction of a machine so far beyond the range of present experience.—W. H. S.

MR. COBHAM'S FLIGHT TO AUSTRALIA.

Mr. Cobham expects to start on his high-speed flight to Australia and back on Monday, June 24. He will use the D.H.50 (Jaguar) on which he flew to the Cape and back, except for the fact that floats will replace the wheel chassis. If arrangements can be made he will change over to a wheeled chassis in Northern Australia (probably at Darwin) and continue the flight to Sidney over land.

The start from England will be made from Rochester, where Short Bros. are now fitting the floats.

Owing to the General Strike delaying work on the machine and engine, Mr. Cobham expects trouble with the monsoon in India. But if he succeeds in making the flight it will be still more important, as future air lines will have to weather the monsoon.

The British Petroleum Co. will be responsible for the fuel supplies as far as Karachi, the Burma Oil Co. will undertake supplies from Karachi to Singapore, and the remainder of the flight will be in the hands of the Shell Company.

COPENHAGEN—TOKYO.

Lieut. Botved, Royal Danish Army, who left Copenhagen on Mar. 16 to fly to Tokyo, arrived at Tokorozawa, the chief Japanese Army aerodrome near Tokyo, on June 1.

It will be remembered that Lieut. Botved, in company with Lieut. Herschend, both flying Fokker C.V biplanes (450 h.p. Lorraine-Dietrich engines), left Copenhagen together, but that Lieut. Herschend was forced to land in a paddy field near Rangoon and damaged his machine.

It was decided that Lieut. Botved should proceed to Tokyo alone and on his return journey Lieut. Herschend should rejoin him, if his machine was ready in time. Later arrangements were made for Lieut. Botved to return via Siberia and Central Europe.

Therefore Lieut. Herschend left Rangoon as soon as his machine was repaired. He was held up by sickness at Bagdad, but has since been reported to have arrived at Aleppo.

Lieut. Botved's itinerary to Tokyo was as follows :—

Mar. 16 Copenhagen, 23 Aleppo, 28 Karachi, 31 Calcutta.

Apr. 3 Rangoon, 4 Bangkok, 12 Canton, 19 Foochow, 2 Shanghai.

May 22 Peking, 28 Haiju, Korea, 30 Osaka.

ACROSS THE MEDITERRANEAN.

Three Farman Goliath seaplanes, fitted with two 400 h.p. Jupiter engines each, flew from St. Raphael to Bizerta at the end of May to complete the equipment of a squadron of twelve machines, all of which have been delivered by air from the Farman works at Billancourt, Seine.

The machines have flown as land machines to St. Raphael and there have been fitted with floats for the trans-Mediterranean flight.

Vice-Admiral Dumesnil, Inspector-General of Naval Forces in the Mediterranean, was a passenger in one of the last three.

PARIS—TOKYO.

Capt. Pelletier Doisy and M. Carol, who met with misfortune at Warsaw, while attempting to fly from Paris to Tokyo via Soviet Russia on a Potez XXV biplane (450 h.p. Lorraine-Dietrich engine), are preparing to make a further attempt, this time on a Breguet XIX biplane, which has been placed at their disposal by the authorities.

A NORTH AFRICAN TOUR.

On May 23, Sergeant Couret, carrying as passenger Corporal Hirschauer, left Istres on a Morane Saulnier monoplane fitted with a 120 h.p. Salmson engine on an extended tour of Morocco, Tunis, Tripoli and Egypt. They arrived at Barcelona on the same day.

On May 24 they reached Tangiers, having landed at Alicante en route.

On May 26 they flew to Casablanca, on the 27th to Rabat, the 28th to Fez and the 29th to Algiers.

The projected tour will cover approximately 7,500 miles.

LISBON—CASABLANCA—LISBON.

During March, two officers of the Portuguese Army Flying Corps, Major Sarmento de Baires and Lieut. Pais Ramos, the latter carrying Capt. Castilho as passenger, flew from Lisbon to Casablanca and back on two Vickers Valparaiso biplanes (450 h.p. Napier Lion engines). The duration of the out and return journeys was from four to four and a-half hours including landings at Lagos en route.

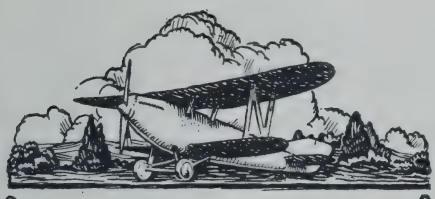
From Lagos to Casablanca and return the flight was made in a straight line over the sea, navigation being carried out with the aid of a Coutinho sextant, invented by Rear-Admiral Gago Coutinho and used by him on the famous flight across the South Atlantic. This sextant had been modified by Capt. Castilho, who acted as navigator on the Lisbon—Casablanca—Lisbon flight.

BASEL—NAPLES—BASEL.

On May 21, 1st Lieut. Mittelholtzer, a reserve officer in the Swiss Army, flew from Basel to Naples, a distance of 1,000 kms. in 7 hours 30 mins., non-stop. The return journey was made on May 24 in a flying time of 6 hours 50 mins.

He was flying a standard Junkers F.13 belonging to the " Ad Astra Aero " Co. and carried three passengers.

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THE
COLLIER
TROPHY

This Trophy, given annually for the greatest achievement in aviation in the United States of America, has recently been awarded to Mr. S. A. Reed, in recognition of the outstanding successes of his all-metal Airscrew during the past year.

Sole Manufacturers, and Licensees of the Reed Patent Airscrew for the British Empire:

The Fairey Aviation Co., Ltd.,
Hayes, Middlesex.

FAIREY-REED
ALL-METAL AIRSCREW

THE ROYAL AIR FORCE.

The London Gazette.

June 1.

General Duties Branch.—The following are granted S.S. comns. as Plt. Offs. on probation, with effect from and with seniority of the dates indicated :—

J. D. Allcroft, A. Allen, E. S. Baverstock, S. C. Bell, A. M. Butt (Sec. Lt., Devon R., T.A.), J. F. O'R. Coleman, M. R. Edmondes (Sec. Lt., R.A., T.A.), L. E. R. Fisher, M.C. (Lt., R.A.R.O.), P. A. Hawkesworth, C. H. Hockly, A. M. D. Howes, G. H. G. S. Jenkins, W. E. P. Johnson, L. T. Keens, F. L. Lawrence, P. G. Lucas, L. G. Martin, A. L. Mortimer (Sec. Lt., R.A., T.A.), K. C. Netherton, S. Pritchard-Barrett, H. J. G. E. Proud, B. F. O. Smith, R. H. C. Taylor, E. D. Turner (May 8); C. F. Ashton (May 9); E. L. Burslem (May 10).

June 4.

General Duties Branch.—The following are granted perm. comns. in the ranks stated (June 1) :—Flt. Lt.—F. J. W. Mellersh, A.F.C. Flg. Offs.—D. F. Anderson, D.F.C., T. W. S. Brown, J. L. Wingate.

The following Plt. Offs. are promoted to the rank of Flg. Off. :—W. T. Holmes, P. H. Nicholls (Feb. 15); J. S. Georgeson (Apr. 15).

Flg. Off. J. P. Cafferkey is restored to full pay from half-pay (May 31); Flg. Off. N. Vintcent, D.F.C., is placed on half-pay, Scale B (May 31); Flt. Lt. M. Keegan, O.B.E., M.M., is placed on the retired list, and is granted permission to retain the rank of Sq. Ldr (June 1).

The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty (June 1) :—W. G. du Bédat, J. A. Grieves.

Stores Branch.—Flt. Lt. J. V. Mason is granted a perm. comn. in this rank (June 2); Flg. Off. W. Bourne is granted a perm. comn. in this rank, with effect from Aug. 10, 1925, on completion of probationary service.

Accountant Branch.—Wing Cdr. W. H. Holroyd is placed on the retired list at his own request (June 1).

Reserve of Air Force Officers.—The following Flg. Offs. are transferred from Class A to Class C :—J. F. Horsey (May 5); C. R. McMullin (May 19). The following Flg. Offs. relinquish their comns. on completion of service :—G. T. Griffith, T. B. Tully, A.F.C. (Apr. 20); P. G. Addie, G. Cameron (May 15). Flg. Off. C. W. Sutcliffe relinquishes his comn. on account of ill-health, and is permitted to retain his rank (June 2).

Appointments.

Week ending June 5.

General Duties Branch.—Air Commodore H. C. T. Dowding, C.M.G., to Air Ministry, on appointment as Director of Training, 27/5.

Wing Commander A. C. Maund, C.B.E., D.S.O., to H.Q., Air Defence of Great Britain, Uxbridge, for Technical Staff duties, 1/6.

Squadron Leaders E. H. Sparling, A.F.C., and E. A. Beaulah, to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. W. B. Hargrave, O.B.E., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 1/5. W. V. Strugnell, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 9/5. A. Coningham, D.S.O., M.C., D.F.C., A.F.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 9/5. W. S. Caster, M.C., to No. 70 Sqdn., Iraq, 8/5. A. J. Currie, to No. 16 Group H.Q., Lee-on-Solent, 19/5. V. S. Brown, to C.F.S., Upavon, 19/5. T. E. Salt, A.F.C., to No. 12 Sqdn., Andover, 19/5.

Flight Lieutenants M. A. Simpson, to No. 39 Sqdn., Spittlegate, 1/6. R. Jope-Slade, D.S.C., to No. 32 Sqdn., Kenley, 21/5. H. V. Rowley, to A.A.E.E., Martlesham Heath, 1/6. S. D. Culley, D.S.O., to A.A.E.E., Martlesham Heath, 25/5. L. J. Riordan, A.F.C., to No. 58 Sqdn., Worthy Down, 27/5. H. W. Evens, to E. and W. School, Flowerdown, 14/5. S. Graham, M.C., to No. 27 Sqdn., India, 3/5. A. C. B. Harrison, M.C., to No. 2 Wing H.Q., India, 22/4. J. F. T. Barrett, D.F.C., to No. 84 Sqdn., Iraq, 8/5. O. E. Carter, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 1/5. A. J. Warwick, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 9/5. R. C. Bryant, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 15/5. W. H. Park, M.C., D.F.C., to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. A. R. Jones, to School of Photography, Farnborough, 1/4. R. Ivelaw-Chapman, D.F.C., to No. 99 Sqdn., Bircham Newton, 10/6.

Flying Officers R. H. Windsor, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 23/5. J. B. H. Rogers, to No. 31 Sqdn., India, 15/5. J. J. Nolan, to No. 6 Sqdn., Iraq, 2/5. G. L. Gandy, to No. 45 Sqdn., Iraq, 12/3. R. F. Casey, D.F.C., to C.F.S., Upavon, 26/5. A. E. Thompson, to R.A.F. Reception Depot, West Drayton, 4/6.

Pilot Officers T. P. F. P. Fagan, to No. 55 Sqdn., Iraq, 12/3. G. P. Mee, to No. 45 Sqdn., Iraq, 12/3.

Medical Branch.—Flight Lieutenant C. V. D. Rose, to No. 14 Sqdn., Palestine, 10/5. F. G. Howell, to No. 4 F.T.S., Egypt, 15/5. A. E. Barr-Sim, M.B., to H.Q., Special Reserve and Auxiliary Air Force, 1/6. Flight Lieutenant (Dental) P. E. Brown, to No. 10 Group H.Q., Lee-on-Solent, 31/5.

Flying Officers R. S. MacLatchy, to Palestine General Hospital, 12/5. A. Harvey, M.B., to R.A.F. Depot, Egypt, 11/5. Flying Officer (Dental) F. F. Anslow, to R.A.F. Depot, Uxbridge, 7/6.

Stores Branch.—Wing Commander F. C. Williams, O.B.E., to H.Q., Air Defence of Great Britain, Uxbridge, for Stores Staff duties, 1/6. Squadron Leaders F. A. Baldwin and T. G. Skeats, to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. Flying Officers A. Walters and C. A. Longhurst, to H.Q., Air Defence of Great Britain, Uxbridge, 1/6.

Accountant Branch.—Squadron Leader E. W. Gregory, M.C., to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. Flying Officer F. H. Wakeford, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 1/5. Flying Officer W. A. Wadley, to R.A.F. Depot, Uxbridge, 14/6. Pilot Officer R. Cassels, to No. 2 F.T.S., Digby, 7/6.

Captain Marson's Resignation.

The latest Air Force List discloses the fact that Captain T. B. Marson, who has been for seven years Private Secretary to the Chief of the Air Staff, has left the Air Ministry. Last month's Air Force List showed him as Civil Assistant, with Mr. I. V. H. Campbell as Private Secretary to the C.A.S. Captain Marson resigned to take the post of Private Secretary to Lord Ellesmere.

Before the War T. B. Marson was a Yeomany officer and early in the War he lost a leg in Gallipoli. Thereafter he joined the R.F.C. as a Recording Officer and was particularly associated with 56 Squadron, which was generally regarded as being our opposite number to the late Baron von Richthofen's famous "Circus." Soon after the outbreak of peace he was appointed Private Secretary to Sir Hugh Trenchard and in that capacity he became one of the best-known figures at the Air Ministry.

In all who met him he inspired a feeling of genuine affection and regard on account of his unfailing kindliness and the trouble which he was always ready to take to make life easier for others. Whether it was a distressed young Flying Officer or a worried Air Commodore with whom he had to deal he always managed somehow to make his path smooth.

At the same time he was one of the shrewdest judges of men whom one has met. He was an untiring worker and never spared himself in the slightest degree so long as he could serve the interests of his beloved Chief and of the Royal Air Force. Though by no means a politician, for nobody was ever more direct and open than T. B. Marson, he showed an extraordinarily quick and clear perception of political situations, whether in Service or national or international politics.

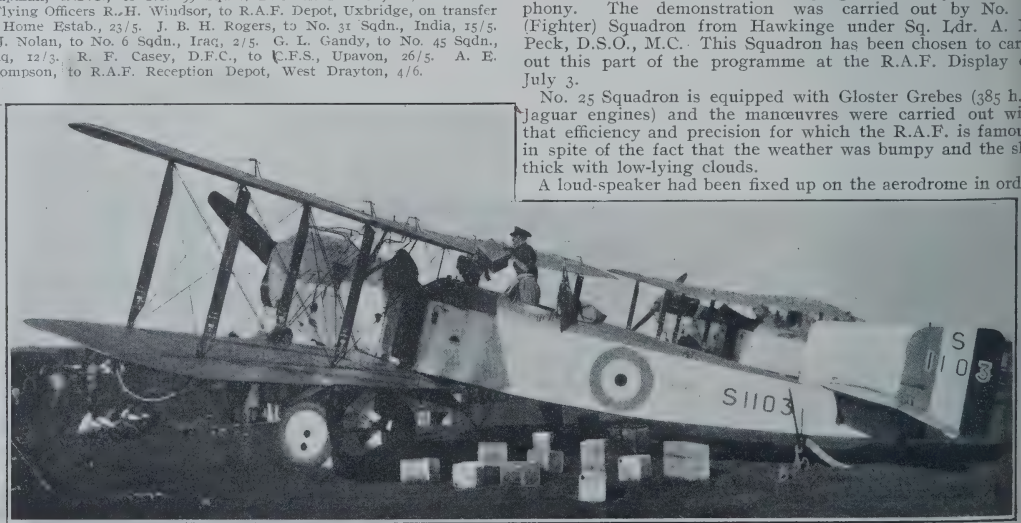
All those who have had dealings with Capt. Marson will learn with deep regret of his departure from the Air Ministry and will wish him everything good in his new activities with Lord Ellesmere, who has thus deprived the Royal Air Force of one of its most loyal and valuable servants.—C. G. G.

Hello Cuckoos!

A short demonstration was given at the R.A.F. Station, Kenley, on June 3, of formation flying directed by radio-telephony. The demonstration was carried out by No. 25 (Fighter) Squadron from Hawkinge under Sq. Ldr. A. H. Peck, D.S.O., M.C. This Squadron has been chosen to carry out this part of the programme at the R.A.F. Display on July 3.

No. 25 Squadron is equipped with Gloster Grebes (385 h.p. Jaguar engines) and the manœuvres were carried out with that efficiency and precision for which the R.A.F. is famous, in spite of the fact that the weather was bumpy and the sky thick with low-lying clouds.

A loud-speaker had been fixed up on the aerodrome in order



THE KING'S HIGHWAY.—Fairey III Ds (Napier engines) of the Cape Flight, R.A.F., being filled up with Shell Spirit at Kimberley on the popular Cape to Cairo route.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.



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that the Squadron Leader's orders should be heard on the ground. But unfortunately the orders were given at the precise moment that the squadron was passing over the heads of the onlookers, with the result that most of the orders were drowned in the roar of the engines.

It is suggested that on the day of the Display orders should be given while the squadron is out beyond the Aerodrome and then they will be heard quite clearly and the subsequent operations will be observed by the spectators without getting a crick in their necks.

The *Manual of Air Drill* (Provisional) is of great assistance to the proper appreciation of these squadron evolutions and it is hoped that a brief description taken therefrom will appear in the Display Programme.

This provisional Manual describes formation by Flights, Squadrons and Wings and gives a description of the various formations and the R/T order which is given in the air. These orders seem to be amazingly simple and comprehensive and all possibility of error appears to have been eliminated.

The standard Flight formation, either Flight Vic (three or five machines) or Flight Star (four machines) is resumed after each manœuvre by the word "Flight" which means to all intents and purposes "As you were," the actual order being "Flight, I repeat Flight, Go." A formation flying on the same horizontal plane (or level) may be stepped upwards or downwards with reference to the leader and the R/T order is simple "Up" or "Down" with the usual repetition and the final word "Go."

If an order has the prefix "Flight," it refers to the disposition of Flights with reference to the directing Flight and if it has the prefix "Squadron" it refers to the disposition of the individual aeroplanes of the Squadron with reference to the Squadron Leader. But if an order has no prefix it refers to the disposition of aeroplanes in the Flights.

When it is desired to form Wing formation the order given by R/T will be "Wing." The principles of Wing Air Drill are the same as Squadron Air Drill except that the Squadron and not the Flight is the tactical Unit for drill purposes.

The demonstration at Kenley on June 3 consisted of a number of evolutions by the Squadron, including open and closed formations, stepped formations, echelon port and starboard formations, Flights in line abreast and in line astern, Squadron Vic, Squadron abreast and Squadron in line astern and various composite orders. In altering course degrees are always used, not points of the compass.

The most spectacular movement is the turn about in which the whole Squadron reverses its direction while remaining in the same formation, each machine executing a half-roll on the top of a loop.

Even if the public cannot hear the orders on the day of the Display this formation flying will probably be one of the most interesting items of the programme. And if the orders can be distinguished it will probably be the most interesting part of the show.—C. M. MCA.

A Fleet Air Arm Appointment.

The Times of June 2 states :—

Commander R. B. Davies, V.C., D.S.O., A.F.C., who was recently relieved by Commander R. D. Binney as executive officer of the battleship *Royal Sovereign*, is to join the Admiralty to-day for temporary duty in the Naval Air Section, of which he was formerly in charge for nearly four years. He is one of the better-known air fighters in the war who returned to service under the Admiralty instead of transferring to the Royal Air Force. In 1917-18 he was in command of the pilots and observers of the R.N.A.S. operating from the *Campania* in the Grand Fleet.

The Medical Services.

Sir Arbuthnot Lane, in a contribution to *The Morning Post* states :—

At the present time it is almost impossible to obtain candidates for the vacant posts in the medical service of the Army. One must hope that the health of the soldier is not suffering in consequence of this apparent lack of medical attention. A few years ago a very important Committee of Service and lay medical men suggested various reforms tending towards efficiency and economy. Some of the members recommended the amalgamation of the Army, Navy, and Air Medical Services; and that medical officers should be allowed to serve some part of their time with more than one branch—an attraction to the officer and an advantage to the public. Also that promotion should go by merit; that the men should be encouraged to perfect themselves in several branches of their profession; and that the habit of removing a man from the practice of his particular branch on promotion and making him into an administrative officer should cease.

By these means the Services would obtain excellent administrative medical officers, and at the same time the personnel of those practising their specialities would compare favourably with any body of medical practitioners in the world which is not the case at the present time owing to the disabilities under which they labour.

The scheme was carried unanimously by the Committee, but was, however, turned down by the Army Council. Still, it would appear that the present is an excellent time to throw the constitution and future of all the medical services into the melting pot, and to endeavour to advance them all in efficiency and popularity.

A member of the staff of THE AEROPLANE, who also has opinions on the subject, writes :—

"Of all the Service reforms and economies which are advocated by those who contribute spasmodically to the daily press, this proposed amalgamation of the three medical Services seems the most feasible. Most diseases seem to be common to all three Services, and specialists could be posted to and retained by the Service in whose pet disease or injury they specialised.

"Administrative medical officers could be reduced to about half the present number. Most important of all, on the outbreak of war, there would be none of the overlapping and consequent waste of both permanent and reserve medical officers which is bound to occur under the present system."

The Editor is strictly neutral, and is unconvinced either way.

The R.A.F. Dinner Club.

The Fourth Annual Dinner of the R.A.F. Dinner Club will take place in the Connaught Rooms on July 2 (the night before the R.A.F. Display).

The Committee hope that the Secretary of State for Air and the Under-Secretary of State for Air will be present as the guests of the Club.

Application for tickets (10s. each, exclusive of wines) should be made before June 26, to the hon. sec., Flt. Lt. Betts, Bentley Priory, Stanmore, and cheques should be made payable to the R.A.F. Dinner Club.

Past and serving officers of the R.A.F. are reminded that they are eligible to belong to this Club, which was founded in 1923 to provide an annual re-union dinner at which past and serving officers of the Flying Services might meet. The subscriptions are £3 3s. for life membership, or 5s. annually.

An Abu-Sueir Re-union.

The Third Re-Union Dinner of No. 4 Flying Training School, Abu Sueir, Egypt, will be held on Thursday, July 1 at the Piccadilly Hotel, at 7.30 for 8 p.m.

Application for tickets (15s. each) should be made as early as possible to W. T. Walsh, Coolmeen, Whitehall Park, N.19. Dress : Evening Dress with miniatures.

The Middle East Dinner.

The 5th Annual Middle East Dinner was held at the Trocadero on June 3 with Air Vice-Marshal Sir Geoffrey Salmond, K.C.B., K.C.M.G., D.S.O., in the Chair, as usual though one fears for the last time for a few years. Flt. Lt. G. Charlton Anne, who organised the first Middle East Dinner, put in his usual good work, with the result that there were over 140 diners, the guests of the evening being Brigadier-General the Right Honourable the Lord Thomson of Cardington, C.B.E., D.S.O., and Major-General Sir Arthur Lynden-Bell, K.C.B., K.C.M.G., formerly Chief of Staff to General Murray in the early days of the Egyptian campaign and afterwards to General Allenby.

After dinner SIR SEFTON BRANCKER, proposing the Guests, said that an awful lot of hot air was talked on aviation and that he was responsible for a lot of it himself. He recalled that, writing in 17 Addison said that if man succeeded in flying it would fill the World with innumerable immoralities as it would afford such opportunities for intrigues. Lovers might perch on the Monument and the Cupola of St. Paul's would be covered outside with couples like a pigeon house.

Referring to the guests, Sir Sefton said that Lord Thomson had soldiered in Palestine in 1917, and that he was the first Secretary of State for Air to fly to Baghdad. He had thus given a great push to the Cairo-Karachi service. He had also made clear to the Socialist Government that England must remain in Iraq if only to provide a playground for the R.A.F.

Sir Arthur Lynden-Bell, who, Sir Sefton said, was commonly known as Bellinda, had done great things for the Egyptian Expeditionary Force, and was practically responsible for bringing the Middle East Area of the R.F.C. into existence. Sir Sefton recalled how in the early days at the War Office he used to trot round the Park for exercise and almost always met Sir Arthur trotting in the opposite direction and then they used to stop and talk about the futility of this new flying business in the Army.

LORD THOMSON, replying, said that he had a very soft spot in his heart for the Air Force, and for the Middle East Command in particular. The most pleasant episode in his association with the R.A.F. was his trip to Iraq, though he had a suspicion that a certain Squadron Leader Sowrey, who took him for one flight, had given him two special bumps by way of showing that he had the Secrets of State in his power.

People had said that it was impossible to control such a vast region by air force, but the experiment had proved an astonishing success and they had made the desert a great highway to the East. He himself had had to stand the racket of cranks and fanatics who regard the Arabs as a simple, pastoral people who asked only to be allowed to sit under a palm tree. He claimed that he had first called the Air Force the Cinderella of the Services. But he was sure of the spirit and enterprise and courage and endeavour which inspired

SIR ARTHUR LYNDEN-BELL recalled that he and the old R.F.C. the early days of the War in the Middle East had gone through hard and hectic times together. They were told that they were a second threatre of war and had to take whatever materiel they could get. The Germans always had the best modern machines but the R.F. did quite well with old ones.

The R.F.C. was always cheery, and when he felt down on his luck he used to go to R.F.C. H.Q. and always felt better in consequence. The R.F.C. had held its own because it had a top-hole Command and magnificent personnel and an admirable team spirit, thanks to Sir Geoffrey Salmond.

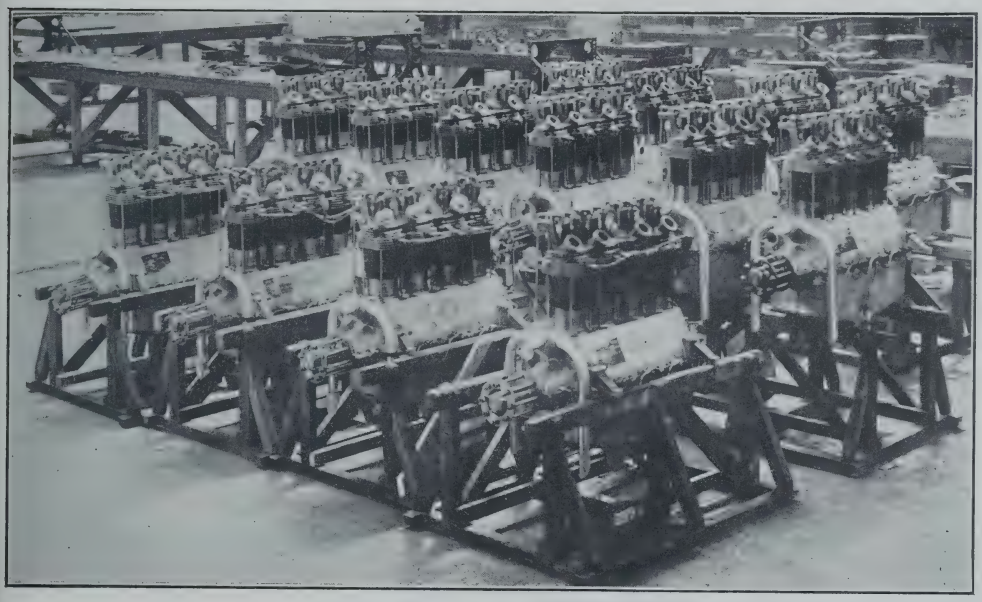
AIR COMMODORE BORTON, proposing the health of Sir Geoffrey, s

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Extract from FLIGHT *Editorial 20th May, 1926.*

"The amazing capabilities of the de Havilland 'Moths' with their 'CIRRUS' engines to go anywhere at any time in any weather has been demonstrated over and over again, although in this connection one should not forget the pilots who flew the machines, and to whose determination to 'get through' a very great deal of the success is of course due."



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(Extract from Lieut.-Commander H. E. PERRIN'S article in "Flight" 20-5-26.)

"One cannot pay too great a tribute to the way in which our aeroplanes stood up to their work; enabling us to maintain 100 per cent. efficiency. The little de Havilland 'Moths,' with their 'CIRRUS' engines, emerged from the ordeal amazingly well."

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that to do justice to the Toast he would have to speak for the rest of the evening, which he felt sure would be intensely irritating to all present. He assured Sir Geoffrey that the loyalty and affection of all Middle Easters for him was as real to-day as when they were under his command. Their best wishes would follow him to his new command in India.

Sir Geoffrey Salmond said that the Toast of the Chairman's health was really purely impersonal. The Chairman might be ill or well. The Toast was really to the old Middle East Command. It reminded him of a landing which he once made at Ramleh when they ran over a camel which was asleep in the grass and crashed. When he got to Egypt and told people about it they all asked what happened to the camel and not what happened to him. In fact the camel died.

The Toast was really the Toast of the R.A.F. Middle East. They must keep up the health of the Middle East Command. The R.A.F. was the only regular unit in Palestine and in Trans-Jordania.

He hoped that all Secretaries of State for Air would follow Lord Thomson's example in flying to Iraq. Lord Thomson had the real regimental sympathy for the R.A.F. and had shown it on many occasions.

The Middle East attracted much attention in aviation. For example, it had attracted Imperial Airways and Mr. Cobham and others over the routes developed by the R.F.C. And now the Middle East, as represented by the Cape Flight, had further developed the route to the Cape. [One may remark that Wing Commander Pulford and Flight Lieut. Emmett of the Cape Flight were both in the Middle East Command.—C. G. G.] Sir Geoffrey also said that the airship people were turning longing eyes on the Middle East.

Iraq had been quiet and prosperous and peaceful under R.A.F. control and he believed that that was why the Government was able to be so firm with Turkey at the Geneva Conference.

In conclusion he laid emphasis on the wonderful way in which Flight Lieut. Anne had collected so many Middle Easters to this gathering.

Flight Lieut. Anne modestly returned thanks.

Among those who attended were:—Air Vice-Marshal Sir Sefton Brancker, Air Commodores A. E. Borton and B. C. H. Drew, Colonels F. Benson and Robertson, Group Captains Burnett, N. D. K. MacEwen and Pink.

Lieutenant-Colonels Scott-Harden, Bovill, Burchall, C. Fraser, W. Elliott, S. S. Nevill, J. E. Tennant and J. E. Dixon-Spain; Wing Commanders H. Blackburn, O. T. Boyd, S. Grant-Dalton, N. Goldsmith, Gaskell-Blackburn, G. P. Grenfell, H. G. Jones, C. E. Maude and Goble.

Majors H. O. C. Anne, Windham Birch, Court-Treatt, F. D. Berridge, W. T. Blake, S. H. Long, G. Merton, J. R. McCrindle, B. J. Nixon and Henry Petre; Squadron Leaders E. B. Beauman, C. B. Cooke, B. P. H. de Roeper, J. Everidge, T. Fawdry, W. J. Y. Guilfoyle, H. F. A. Gordon, H. I. Hanmer, F. H. McNamara, C. H. Nicholas, O'Neill, E. B. Rice and F. H. Songhurst.

Captains H. H. F. Nichols, S. H. Bird, P. L. Hunting, H. Metcalfe, S. L. Pettit, N. C. Ridell, H. C. Roberts, S. F. A. Welsh, Sancroft Baker and J Brown; Flight Lieutenants B. C. Adamson, G. C. Anne, C. H. Awcock, L. J. Bayly, T. K. Burton, E. Burton, L. H. Browning, R. L. Barbour, V. Buxton, T. O. Clogstoun, O. W. Clapp, Ian Cullen, Moffatt, Duminy, G. C. Gardiner, W. A. Harvey, H. R. Junor, A. P. Ledger, A. O. Lewis-Roberts, J. J. Lloyd-Williams, J. M. Mason, E. Meynell, R. B. Sutherland and A. J. G. Styran.

Messrs. C. Ayling, C. G. Grey, S. Bull, J. A. Bonnyman, C. Ll. Bullock, F. W. Carryer, A. I. Campbell-Robertson, G. Cory-Wright, A. D. Carroll, B. H. Cook, B. de Nevers, G. M. Riloart, W. A. E. Featherstone, W. Greene, O'Hanlon, C. E. V. Graham, C. W. Hill, J. R. Hovenden, H. Hamshaw-Thomas, G. L. Hunting, Leslie Hamilton, W. F. Knight, W. N. Lancaster, A. G. Lamplugh, W. J. May, F. May, A. H. Mellows, R. K. Morris, P. A. E. Naylor, P. Phillips, T. Raines, A. E. L. Skinner, W. A. Slocock, F. G. Saunders, A. R. Thomson, T. C. Thrupp, F. D. Travers, R. C. Williams, F. C. Wood, G. J. Williams, W. MacLagan, S. P. Yeates.

R.A.F SPORTS AND PASTIMES.

The Record Office Sports.

The Ninth Annual Athletic Meeting of the R.A.F. Record Office was held at Ruislip on June 5. An excellent programme had been arranged and was carried out under perfect weather conditions in a large field on which a great deal of hard work had evidently been spent. The Central Band of the R.A.F. played during the afternoon.

The Inter-flight Cup was won by No. 3 Flight. A very amusing event was the Blindfold Squad Drill, won by No. 2 Flight.

The winners of the various events were :—

High Jump—L-AC. Price (4 ft. 11 in). *One Mile*—L-AC. Fletcher. *Apprentice Clerks' 100 yards*—ACk. Hawley. *120 yards Hurdles*—L-AC. Price. *Putting the Shot*—AC. Woods. *Apprentice Clerks' High Jump*—ACk. Drew. *Inter-Flight Tug-of-War*—No. 3 Flight. *Warrant Officers' and Sergeants' Race*—S-M.I. Howes. *Long Jump*—AC. Gage. *Apprentice Clerks' 220 yards*—ACk. Drew. *220 yards*—L-AC. Chaplow. *Tug-of-War, Catch-weights*—The Serjeants' Mess beat the Officers' Mess. *Apprentice Clerks' Long Jump*—ACk. Monks. *880 yards*—L-AC. Fletcher. *100 yards*—L-AC. Gage. *440 yards*—L-AC. Baker. *Apprentice Clerks' 440 yards*—ACk. Drew. *Three Miles' Individual and Team Race*—Team, No. 1 Flight; Individual, L-AC. Penny. *Officers' 100 yards Handicap*—Flg. Off. H. C. H. Gibbons. *Inter-Flight Composite Relay*—No. 2 Flight. *Obstacle Race*—L-AC. Pitt. *Inter-Flight Hurdle Relay*—No. 3 Flight. *One Mile Relay (open to R.A.F. Units)*—Henlow (1), Martlesham (2), Northolt (3). *Throwing the Cricket Ball*—L-AC. Andrews (87 yds. 10 ins.). *Apprentice Clerks' Tug-of-War*—Second Entry. *One Mile Inter-Flight Relay*—No. 1 Flight. *Apprentice Clerks' Half-mile*—ACk. Stanfield. *Throwing the Javelin*—Cpl. Cross. *Two Miles' Relay*—No. 1 Flight. *Consolation Race*—AC. Andrews. *Apprentice Clerks' Consolation Race*—ACk. Hillier.

The afternoon concluded with an energetic and entertaining display of quarter-staff combats and a plume-sabre mêlée by the Apprentice-Clerks under Corporal Eyles (British Amateur Champion Javelin Thrower). The prizes were presented by Mrs. J. W. Cordingley.

Iraq Soccer.

A new record for Association Football in the Iraq Command has been established by Air Headquarters' eleven during the season just concluded by the success attained in all the competitions open to Service teams in the Baghdad area. In addition to heading the Hinaidi League table, the Royal Air Force Challenge Cup, and the Taylor Invitation Cup were both secured, although only after a hard struggle in each case.

The ultimate destination of the R.A.F. Cup, which is the Blue Riband of Iraq Soccer, was only decided after two fast and furious games with the British Hospital as our opponents. The first game ended all square with two goals each after extra time had been played, and in the replay the issue was in doubt until four minutes from time, when a glorious goal by Cpl. Sadler settled matters and incidentally completed the hat trick for this player, leaving Air H.Q. winners by three goals to two.

The final of the Taylor Invitation Cup also necessitated extra time being played. In this game our opponents were "C" Sqdn., Iraq Aircraft Depot, and after a typical cup-fighting contest we were successful by three goals to two.

In the Hinaidi League we headed the table shortly after the beginning of the season and were never deposed from leadership, and thanks to the consistency of players and excellent team spirit we were able to finish the season with the following gratifying record:—Played, 30; Won, 24; Lost, 3; Drawn, 3; Goals for, 118; Goals against, 36; Points, 51.

Our success in the above competitions is in no small measure due to the excellent support the team has received from the officers and airmen of Air H.Q., who throughout the season have by their keen interest and vocal powers spurred the team on to greater efforts.



AIR H.Q. IRAQ ASSOCIATION FOOTBALL TEAM.—This team won the Taylor Cup, the R.A.F. Cup and the Hinaidi League Cup (shown in the photograph). The names, reading from left to right are (standing): L-AC. Lloyd, L-AC. Coker, AC. Davidson, L-AC. Nixon, Cpl. Methven. (Sitting): AC. Boorman, AC. Smith, Cpl. Baker, Cpl. Sadler, L-AC. Bilner, L-AC. Stainsby.

NAVAL CO-OPERATION.

The Manchester Guardian of June 4 states :—

Admiral Sir R. G. O. Tupper, addressing cadets on the *Conway* in the Mersey at Liverpool yesterday, urged them to seize any opportunity they got to serve for a time in the Air Force. He hoped shipping companies would encourage their officers to get flying experience, because what we lacked in the war and what we were in danger of lacking in any future wars were airmen with experience of the sea.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

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TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

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SEAPLANE PROPAGANDA IN SCOTLAND.

Recently Flt. Lt. B. C. H. Cross, D.F.C., delivered in Glasgow two lectures dealing with the flying boat. Of these one in the afternoon was delivered to the cadets of the Glasgow Schools, and the other in the evening was before the Scottish Branch of the Royal Aeronautical Society, the Beardmore Aviation Engineering Society, and members of the Fishing Board. The two lectures covered to some extent the same ground, that delivered before the cadets dealing mainly with the work of flying boats in the R.A.F., both during and since the War, in a way that could scarcely fail to interest any healthily minded boy in this branch of the work of the Service, and the other dealing more technically with the practical difficulties encountered in the operation of seagoing aircraft in the same Service and period.

The author described the development of the flying boat as having its beginning in the unreliability of the aero-engine in the early days of the War. Military and naval requirements called for operations by aircraft over the seas. Engine failure on a land machine over water meant not only loss of the machine but death by drowning for the crews. This forced the development of an aeroplane that could alight at sea and remain afloat with reasonable safety.

[How Flt. Lt. Cross conceived this idea is difficult to understand. Mr. Glenn Curtiss, with the help of the late John Porte, had developed the flying boat to trans-Atlantic proportions before the War, and throughout the War the flying boat was so neglected, in comparison with other types of aircraft, that at the end of the War our people were still doing North Sea patrols on land machines.—C. G. G.]

Two types—the float and the boat seaplane—were available. Of these the boat was superior in its ability to alight on and remain afloat in rough seas, but was handicapped by the extra weight of the hull structure. As engines increased in power, and seaplanes in size, this disadvantage decreased.

During the War the existence of the flying boat depended on its capacity to keep afloat at sea, for it was inferior in every other respect to the aeroplane. After each flight it had to be brought ashore and housed in a shed, to be launched again for its next flight. This meant a colossal expenditure on sheds, slipways, etc., and a large use of man-power for launching and getting ashore. These processes led to continual damage to hulls, and large expenses in repairs and maintenance. Housing between flights was necessary to prevent deterioration of the already poor performance of the available boats.

Although the flying boat ended the War with a reputation for having the performance of a poor aeroplane with the one redeeming feature of seaworthiness, it carried out magnificent work, and (particularly in the lecture to the school cadets) the author described some of the war-time achievements of the flying boat patrols on the East coast in a vivid manner.

One effort was made during the War to extend the sphere of usefulness of the flying boat. This was the attempt to establish a base at the Scillies without the usual ground organisation—the boats riding at moorings between flights.

Since the War very great progress had been made in rendering the flying boat independent of the large air station organisation which was considered essential during the War.

The first step in this direction was the construction of the seaplane floating dock. This was designed to take two large flying boats, carried complete workshop equipment, and refuelling facilities. It was in fact a mobile seaplane base capable of tackling all repair and maintenance work.

In 1922 the first serious experiments were made to discover the possibility of operating flying boats away from a shore base. Four boats of 1918 construction made an experimental cruise of six weeks' duration. This proved that the flying boat could safely be moored out in reasonably sheltered water even in winds of gale force, and that such machines would ride out a gale in which any ordinary sea-going craft of equal size would pretty certainly be swamped.

The most disheartening lesson of this test was the deterioration of the boats which were thus exposed to sea and weather. That particular summer was extremely trying, rain and gales were continual, all the hulls developed leaks, the timbers soaked up 500 to 1,000 lbs. of water apiece, and the wings were sodden with rain and salt water. A boat which at the beginning of the cruise was air-borne at 40 knots would not leave the water at 50 knots after a month's exposure. The corrosion of metal fittings and flying wires was excessive.

Modern Developments.

Great improvements have since been made in this matter of deterioration. Modern wooden hulls are more nearly watertight, but still absorb moisture, and this difficulty will it is hoped be overcome by the modern development of metal hulls. Wing construction, and doping systems have been so improved that deterioration is now very small—in the case of a Supermarine Southampton, tests after a year in service showed negligible differences from those made on the same machine in a new condition. Protective paint for steel has been greatly improved, and promising experiments are in hand in the use of stainless steel.

Two types of engines which had been successful in land machines but were only in the experimental stage in seaplanes developed trouble on this cruise as the result of the trying conditions—mainly of working in heavy spray during take-off. This difficulty has now been overcome.

The floating dock proved extremely useful on this cruise. Six engines were changed, and several hulls repaired with its aid. Difficulty was found in docking in a swell owing to the rough water in the well of the dock, but modifications have now been made to simplify docking.

A Fishery Experiment.

Another interesting test of the ability of the flying boat to operate away from a shore station was the 1924 cruise to investigate the possibility of locating herring shoals from the air, made on behalf of the Fishing Board for Scotland. From the fishing point of view the results were not overwhelmingly successful, but in other respects they were of great value.

Three F.5 flying boats with a personnel of seven officers and sixteen other ranks were engaged. All the spares used on the trip were contained in one packing case, and fuel and oil were dumped at Invergordon dockyard. The boats flew from Felixstowe to Invergordon in one day, and during four weeks the fishing grounds were patrolled from the Moray Firth. At the end of this period two boats flew across the Caledonian Canal, down the West Coast and up the Channel back to Felixstowe, the third returning direct to Felixstowe in nine hours.

The weather was almost consistently bad, no parent ship accompanied the expedition, one dinghy was used for transport between the boats at moorings and the shore, and during the period—in which 12,000 miles were flown,—no flying boat was ever under tow of a surface craft.

One boat had to taxi home on one engine as the result of seized starting gear, and another on the way home forced-landed at Dungeness with one engine wrecked. This machine taxied into Folkestone harbour on the remaining engine, and the crew changed the wrecked engine with the aid of a crane belonging to the Southern Railway and flew on to Felixstowe.

Work in 1925.

The notable cruise of two Supermarine Southamptons last summer, which operated for six weeks in the North of Ireland and off the West coast of Scotland, marked a further stage in the development of independence of shore bases. Fuel and spares were carried by the R.A.F. auxiliary ship *Adastral*—a converted trawler. Over 10,000 miles were covered.

With experience it has been found possible to use the smallest of harbours for mooring. The draught of a flying boat is small, and the only limiting factor is the width of the entrance—which must give clearance for the wings. The span of the wings rarely exceeds 120 ft., but in some fishing harbours the entrance width is insufficient for such machines. This however is exceptional, and such small harbours as Penzance, St. Ives, Ilfracombe and Bideford have been entered successfully, so that the seaplane has an almost unlimited number of potential ports of call—far more than are available for ocean-going steamers.

To complete the flying boat's independence of outside assistance two requirements have yet to be met. The first is the provision of a dinghy as part of the equipment, and the second an anchor capable of holding the boat under all conditions. A dinghy was part of the equipment of the English Electric Company's "Kingston" type, but as the type has not been perpetuated the dinghy has not had a fair trial.

The anchor problem—by far the most important—is still unsolved. Without it the flying boat can only use harbours where moorings are either permanently available or have been specially laid. In average good holding ground a 50-lb. anchor will drag at a pull of 300 lbs. An F.5 flying boat will pull 240 lbs. in a 20-knot wind, or a 2½-knot tide. In a 40-knot wind the pull will exceed 1,000 lbs. and a 200-lb. anchor would have very little margin. A 50-lb. anchor is considered an excessively heavy one for a flying boat, but can only be relied upon in light breezes or slow-running tides.

Until the Autumn of 1924 the R.A.F. had only flying boats of 1918 design, and pilots believed that heaviness of control was characteristic of the type. Since then the Kingston and the Southampton types have shown that the flying boat need not be heavy to handle, and flying these modern types is a pleasure instead of hard work.

Metal Boats.

The first British flying boat with a metal hull was built by Short Bros. and delivered late in 1924. It had a standard F.5 air structure and so was purely a hull experiment. It had now flown over 130 hours and had been moored out over four months. The corrosion of the duralumin hull had proved unexpectedly small, and the hull was practically as good now as when delivered. It had also proved to be extremely strong, and had survived a series of bounces taking off in a rough sea that would certainly have holed any wooden hull.

THE DE HAVILLAND
"MOTH" TWO-SEATER
LIGHT AEROPLANE.

ur Cylinder Air Cooled Engine
with Dual Ignition.

Dual Control.

Folding Wings

Hand Starter in Cockpit.

Rubber in Compression
Undercarriage.

Luggage Compartment.

RANGE: 3½ Hours.

PETROL CONSUMPTION:
20 miles per gallon.

EED RANGE: 40-90 m.p.h.

EROBATIC CERTIFICATE
OF AIRWORTHINESS.

THE DE HAVILLAND
"MOTH"
Engine: 27-60 h.p. "CIRRUS."



"Flight" Photograph.

¶ Between May 6th and May 18th, seven de Havilland "Moths" covered an aggregate distance of

15,275 MILES

upon services of national importance.

During the whole period there was no instance of delay in departure, no suspicion of mechanical breakdown, and not a single involuntary landing.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
STAG LANE AERODROME,
EDGWARE, MIDDLESEX.

Telephone—Colindale 6160-6163. Telegrams—"Havilland, Edgware."

Late in the summer of 1925 a Danish-built Rohrbach flying boat of the type known as the Inverness was delivered. This was of metal throughout, which should overcome all the difficulties of soakage and of wing deterioration from exposure. This seemed the rational direction for future development. As a second Inverness (the first flying boat to be built in Scotland) was under construction at Dalmuir, they would probably like to hear more about it, but unfortunately the results of tests were not yet available for publication and it would be premature for him to discuss them.

Desirable Qualities.

The flying qualities desirable in a flying boat naturally comprised high top speed, rapid climb, long duration, and good useful load capacity. Less obvious perhaps was the need for a low minimum speed and good control at that speed.

If a flying boat were needed to operate only from a sheltered lake it would not matter if the take-off speed were 60 or 65 knots. But for work at sea in a swell such a characteristic would be alarmingly important. A flying boat does not fly off a swell. It bounces off, and the pilot has no control of the bounces and very little between them. The boat which flies at the lowest speed will make the fewest bounces, and the element of luck which intervenes is reduced.

And, naturally, if one is forced to land on a rough sea it is preferable to hit the water at 40 rather than at 50 knots. It is rarely that the boat will stop on the water at the first attempt, and the higher the landing speed the bigger the bounce, and the greater the risk of not landing square after it. And if one wing drops, the wing tip float and possibly the wing may be damaged. As the stability of the craft on the water depends on the wing tip floats, such an accident may easily involve a total loss of the craft.

Recent flying boats showed marked progress in this direction. In particular the Supermarine Southampton had a performance which compared favourably with a land machine of similar power, a very low minimum speed and an exceptional range.

Difficulties yet remained to be surmounted, but the author did not desire to encourage pessimism. The development of the past four years showed that the flying boat could in the future discharge functions completely beyond the sphere of the aeroplane.

Every continent had a coast line dotted with harbours. Stretching inland were navigable rivers and often chains of lakes. All these were potential aerodromes for the seaplane. The seaplane had shown that it was almost independent of outside help and at least equal to the aeroplane in performance. The small band of flying boat workers therefore faced the future with enthusiasm, faith and optimism.

THE DALMUIR AVIATION ENGINEERING SOCIETY.

In March, 1925, the Aviation Department of William Beardmore and Company formed the Dalmuir Aviation Engineering Society, with the object of giving those interested in aviation a chance to mingle with their kind and to absorb and divulge further knowledge on the subject. During the first session the Society met with sufficient response to arrange a programme during the 1925-26 session of over a dozen meetings comprising lectures and debates of technical and topical interest, and social evenings.

These meetings, which include such interesting items as a lecture by Captain Kingwill, the firm's chief flying instructor on the handling of aircraft in flight; a debate on wood construction versus metal construction between Mr. Shackleton, the firm's designer, and Mr. McIntyre; and a lecture on the development of the flying boat by Flt. Lt. B. C. H. Cross, were well attended and proved a success.

The total subscription from each member is 13s. 6d., paid by regular deductions from their wages. This sum covers the cost of refreshments at meetings. The Society is self supporting, except in the matter of hall accommodation which is not a charge on the funds, and at the end of the last session a small credit balance remained. The membership numbers 109 and the average attendance at the meetings was over 70.

The names of the Committee of the Society are as follows :—Chairman and Convener, Mr. H. Walker Arnott (Welfare Supervisor). Business Committee : Mr. S. Baxter, Mr. W. S. Shackleton, Mr. F. Herdman and Mr. A. M. Russell. Socials Committee : Mr. A. Dick, Mr. J. Harvey, Mr. A. Buckley, Mr. J. Simpson, and Mr. A. C. Lamb.

This very enterprising organisation is one which might with advantage be emulated by other large aircraft firms. It provides a meeting place on common ground for the works and design staff, draughtsmen, inspectors and men of the various trades who do the actual construction work, where they can exchange ideas and derive mutual enlightenment. Incidentally it also gives employers a very good chance of observing which members of their staff take a sincere interest in their job.—M. H.

SAFETY FIRST AT RENFREW.

The following article is taken from "The Beardmore News," the house organ of William Beardmore and Co. Ltd. It will be of considerable interest to all concerned with the R.A.F. Reserve :—

It is quite true that improvements in the reliability of engines and aircraft render flying safer every year, but enhanced reliability tends to lead to things being "taken for granted."

Inspection at Renfrew is carried out by a carefully selected and most efficient staff of ground engineers. There is first of all a daily inspection of engines and aircraft. All the essential items which experience has shown to give trouble in the slightest degree, are detailed on a schedule. There are no less than twenty of these for each Siddeley Puma engine, eighteen for D.H.9 aircraft, and nine for the instruments fitted to each aeroplane. All these items must be examined by the ground engineer responsible, found or made O.K., and checked off on the schedule with his signature.

After the first 25 hours' flying the engine and aircraft are subjected to a fuller inspection; all covers are removed and a further list of details examined.

Overhauls are carried out at the usual intervals provided no trouble has developed in the meantime. The top overhaul in the case of 240 h.p. Puma engines, consists of removing the cylinders, camshaft and casing, valves, etc. The same routine applies to complete overhauls with the addition that the engine is completely dismantled, every part cleaned and examined by itself, and a report made as to the condition all replacements called for are brought forward, examined and fitted.

For each part and operation there is a space on the overhaul schedule, and when all requirements have been fulfilled by the engine, as to power output, revolutions per minute carburation, etc., the schedule is signed and duly entered in the Engine Log Book by a ground engineer licensed by the Air Ministry for aircraft engine construction, testing and overhaul.

Apart from the daily inspection schedule, there is an essential daily safety certificate. This must be signed every morning by the ground engineer who must make an examination before flight. These engineers are held responsible to the Air Ministry for the safety of aircraft, instruments or engines. This certificate is also signed by the pilot, who is also licensed by the Air Ministry, to whom he is responsible that the aircraft is loaded and equipped for flight as specified in the certificate of airworthiness which they issue.

In addition to these precautions a pilot-instructor tests each aeroplane in the air every morning before it is flown by pupils, so that nothing is taken for granted.



SAFETY AT RENFREW.—Pilots, mechanics, and pupils at the Beardmore School for R.A.F. Reserve Pilots.

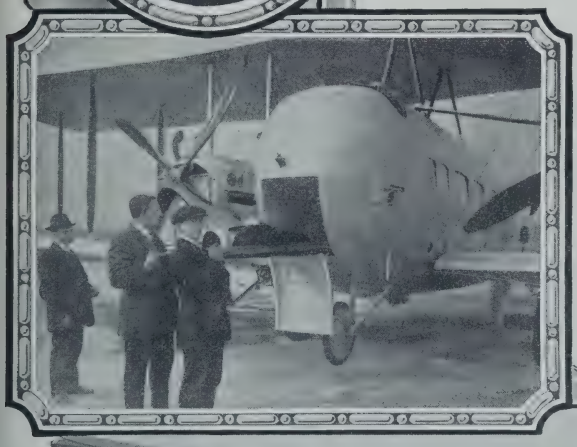
VICKERS LIMITED



AIRCRAFT

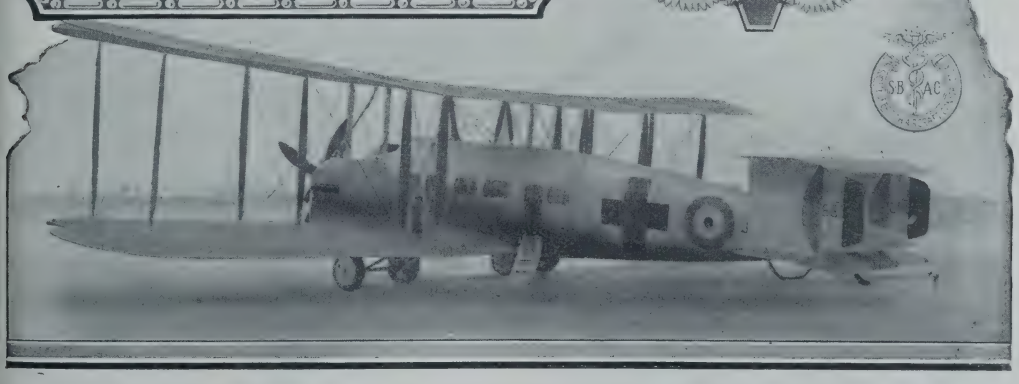
of all types for Commercial, Naval, and Military Purposes.

The machine illustrated is the Vickers "VIMY" Ambulance, as supplied to the Royal Air Force for operation in the East, where this type has proved of great value for the rapid evacuation of sick and wounded.



Fitted with twin 450 H.P. Napier "Lion" engines the "VIMY has accommodation for a crew of 2 and Doctor, Nurse and 4 stretcher cases or 8 "sitting up" cases.

Aviation Department,
VICKERS HOUSE,
BROADWAY,
LONDON, S.W.1.
Works: WEYBRIDGE, SURREY.



ANOTHER CRANWELL EFFORT.

A very interesting engine for light aeroplanes has been designed by Captain Douglas R. Pobjoy, Education Officer, No. 4 Apprentices' Wing, Cranwell, and produced by him with the help of a group of enthusiastic R.A.F. officers and N.C.O.'s and civilians, of the Cranwell station, working voluntarily in their spare time. It has not been produced by the Cranwell Light Aeroplane Club, but if the engine passes its type-tests it will be loaned to the Club for one of the new two-seaters which is being built for the Light Aeroplane Competitions at Lympne.

The engine is a seven-cylinder, geared-down, radial, air-cooled, of 2½ litres capacity. Bore 72 mm. Stroke 87 mm. It is rated at 50 b.h.p. at 3,200 r.p.m. of the crank-shaft, and 1,680 r.p.m. of the airscrew.

It has two sparking plugs per cylinder, and two Blic magnetos. It has a Zenith carburettor. Lubrication is of the dry-sump type with forced lubrication by two ordinary type pumps and one centrifugal pump. The total weight, including two magnetos, carburettor, airscrew hub and short exhaust pipes, is 100 lbs. to the ounce.

The airscrew shown in the photograph is merely an air brake, or what the Americans call a "test club."

So far the engine has done about ten hours' running at 3,000 to 3,200 r.p.m. and nothing has broken, melted or worn out.

In spite of its appearance it is not really complicated nor expensive to build, and the designer is prepared to argue that for a given degree of performance a complete aeroplane with such an engine could be made cheaper than with a cruder type of engine made up of a smaller number of pieces, and that it would also be cheaper to run.

The making of the actual parts was farmed out to various constructors. But all the assembling and fitting was done by volunteer labour at Cranwell.

THE NEW ARMSTRONG-SIDDELEY ENGINE.

It is understood that tests are proceeding satisfactorily with the new Armstrong-Siddeley low-power, five-cylinder, radial aero-engine, called the Genet. The engine is said to develop 60 h.p. and weighs just under 170 lbs. It is understood that at least five of this type will be used in the Lympne light aeroplane competition.

It is understood that one such engine is being fitted into the Westland Wood Pigeon, and that on this machine Major Openshaw will make an extended tour of Europe by way of finding out teething troubles which are always present in any new type of engine.

The name Genet is derived from an animal which is a member of the feline tribe and so continues the Siddeley series which includes the Jaguar, Tiger, Puma, and Lynx. According to the dictionary the Genet is a "viverrine carnivore smaller than a true civet and having only rudimentary scent pouches." Perhaps if the Genet gets on the scent of any of the big prizes it may again find use for its pouches.

AUSTRALIAN AERONAUTICAL ENGINEERING.

The Institution of Aeronautical Engineers, Australian Branch, seems to be in a very good way of business. Although it has only eleven Members, thirteen Associate Members and six Associates, it has managed to finish the year 1925 with a balance in hand of £40 3s. 10d. The Honorary Secretary and Treasurer, Capt. P. Roach Pierson, of 50, Paxton Street, East Malvern, Victoria, deserves to be congratulated on the result.

The following are the officials of the Institution for the year 1926 :—President :—Lt.-Col. J. T. C. Moore-Brabazon, M.P., M.C. (presumably President by proxy); Vice-Presidents :—The Hon. Sir Alfred Ashbolt and Major Norman Brearley; Chairman :—Sq. Ldr. L. J. Wackett; Deputy Chairman :—Lt.-Col. H. C. Brinsmead; Committee :—Capt. D. S. Aarons, Lieut. C. R. Richards, Flt. Lt. I. E. McIntyre, Lieut. F. Haig and D. K. Laidlaw; Grading Committee :—Sq. Ldr. L. J. Wackett, Lt.-Col. H. C. Brinsmead, Lieut. C. R. Richards and Capt. P. Roach-Pierson; Hon Auditor :—Capt. Guy Moore.

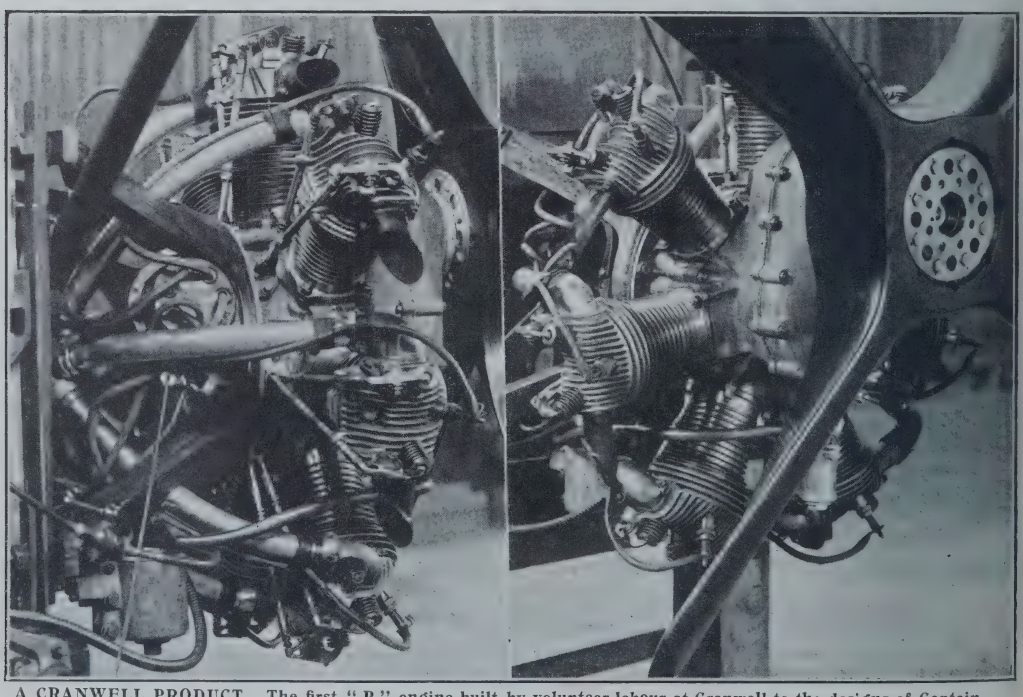
ENCOURAGING PUBLIC INTEREST.

That very excellent monthly magazine *Meccano* publishes in its June issue particulars of a competition the prizes for which are free flights in de Havilland Moth aeroplanes. The contest is for the twelve best suggestions submitted by readers of the paper for a suitable type-name for the five three-engined air liners now being constructed by the de Havilland Aircraft Co. Ltd. to the order of Imperial Airways.

The rules for the competition, which, unlike the usual involved and lengthy conditions of most competitions, are extremely simple, are accompanied by an explanation of the general practice of giving aeroplanes type-names that begin with the same letter as the name of the maker. It is however stated that although this is usual it is not essential and that any novel and bright suggestions will be welcome.

The prize flights will be made from the de Havilland Aircraft Company's aerodrome at Stag Lane, Edgware. Those prize winners who are unable either through circumstances or distance to take advantage of their free flight automatically renounce it in favour of the next on the list of merit.

One congratulates the Editor of *Meccano* on his enterprise in initiating this competition. This paper is doing a great deal of good work in popularising aviation among the young. The type of youth who reads *Meccano* is exactly the type wanted for the R.A.F. And those pages in the paper devoted to air news contain more accurate and interesting information about current aviation events and productions than do many of the so-called aviation papers at present in existence.



A CRANWELL PRODUCT.—The first "P" engine built by volunteer labour at Cranwell to the designs of Captain Pobjoy. It is estimated to give 50 h.p. with a bore of 72 mm. and a stroke of 87 mm.

Why Well Balanced Petrol?

Some petrols give you easy starting, some climb hills without "pinking," and some have that chemical cleanliness which prevents destructive corrosion and valve gumming.

There is a motor spirit which combines all the good qualities a spirit should have—***because it is well balanced.*** That spirit is Shell Petrol. Use it always in your car.



160 Miles per Hour on Ordinary Shell

On April 27th, Mr. J. G. Parry Thomas, on the Pendine Sands, used ordinary Shell Petrol in achieving a speed of 160 miles per hour. This is 8 m.p.h. faster than any man ever drove before that day. It was done on exactly the same kind of well-balanced petrol that you can buy everywhere from the Sealed Shell Pump.

SHELL

The Well-balanced Petrol

THE FAIRCHILD CAMINEZ CAM ENGINE.

A very interesting type of four-cylinder air-cooled radial engine, known as the Fairchild Caminez, model 447-B engine, has just been produced by the Fairchild Caminez Engine Corporation, of New York City, which is allied to the famous Fairchild Aerial Camera Corporation.

The engine is a four-cylinder radial employing a cam drive mechanism in which the reciprocating motion of the pistons is converted into the rotary motion of the propeller shaft by means of rollers in the piston operating on a double-lobed cam on the main shaft. With the four-stroke cycle that is used, each piston completes a power stroke every revolution of the shaft. By this means a high-power output is obtained per cubic inch of piston displacement at a low airscrew speed, the shaft speed on the Fairchild Caminez engine being one-half that of a normal crank engine of equal piston displacement for the same power output.

Similarly the motion of the pistons in opposite cylinders is identical with respect to the engine axis so that the piston inertia forces balance each other, ensuring perfect running balance without the use of counter weights.

The four cylinders are arranged radially about a central rotable cam. The cam is of the double-lobed type shaped generally like the figure 8. A roller bearing is mounted in each piston, the outer race of which acts directly on the cam. Adjacent pistons are connected by a series of links, the contour of the cam being so designed that these links maintain the piston rollers in continual contact with the cam.

The cylinders consist of hardened steel finned barrels screwed and shrunk in special aluminium alloy heads. Bronze valve seats are shrunk into the cylinder heads and phosphor bronze valve guides are used.

The pistons, of the slipper type, are of heat-treated aluminium alloy and are provided with four compression rings. Special double-row roller bearings are mounted on each piston, the pistons being made with detachable caps to facilitate assembly.

A gudgeon pin passes through the centre of each roller bearing and to the extremities are fastened the link holders.

The links interconnecting the pistons consist of alloy steel straps. They have hardened steel pins keyed at their extremities which work on bronze bushings in the piston link holders. Lubrication of these bearings is obtained by oil jets in the main engine shaft which register with these bearings at every bottom stroke of the piston.

The intake manifold is an aluminium casting which fits in the rear engine casing. Two separate passages are contained in this manifold which connect to the separate barrels of the Stromberg duplex carburettor which is bolted directly to the case beneath the oil pump.

The valves, valve rockers and push-rods are quite normal. The combustion heads are dome-shaped and fitted with two sparking plugs per cylinder.

The main shaft of the engine is a straight alloy steel shaft to which the cam is splined. This shaft is supported in the engine case, forward, by a deep-groove radial ball-bearing which takes all the thrust load on the shaft and part of the axial load, and at the back by a plain roller-bearing. A centre plain-bearing with a large clearance is fitted, this bearing taking but little of the axial load, but acts mainly as a means of transmitting lubricating oil from the case to the shaft, whence it is distributed throughout the engine.

As each piston makes four strokes per revolution of the engine the valve cams are mounted directly on the main engine shaft, which operates all the valves in the engine. Valve tappet plungers are contained in removable aluminium alloy guides which fit in the nose end of the main engine casing.

The main engine casing consists of two aluminium alloy castings, split through the cylinder axis and bolted together by eight long studs.

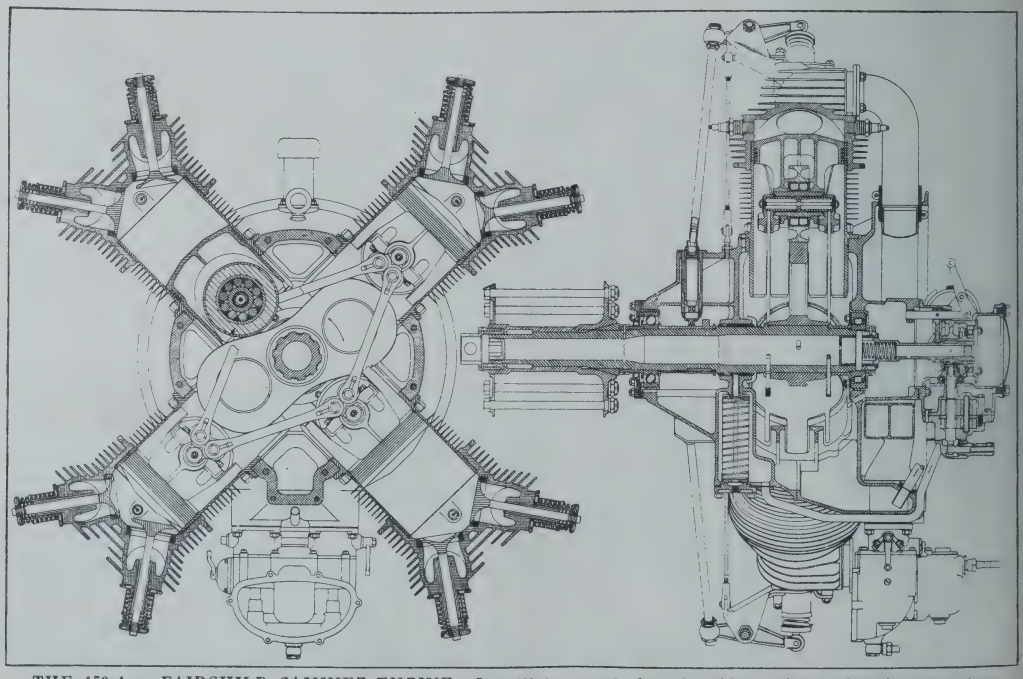
The engine auxiliaries, comprising two four-cylinder magnetos, pressure and scavenging oil pumps and tachometer drive, are assembled as a unit in a separate casting which bolts onto the rear of the main casting.

The magnetos and oil pumps are driven by bevel-gear pinions which mesh with a single-bevel drive gear in the auxiliary casting.

This bevel drive gear is connected to the main engine shaft by means of the auxiliaries drive shaft. This shaft has a straight spline on its rear end which engages with the bevel drive gear and a spiral slot at its front end through which it is driven by a hardened pin in the main engine shaft. This auxiliaries drive shaft may be moved back and forth by means of a yoke and lever. The movement of this shaft rotates the bevel drive gear with respect to the main engine shaft and is used to retard or advance the magnetos. It is normally held in the fully advanced position by a spring.

The engine starter dog also engages with the spline in the bevel drive gear, but it is so arranged that when the starter dog comes into engagement the magnetos are automatically retarded.

Specification :—
Four-cylinder, radial, air-cooled cam type engine.
Rated h.p. : 150 at 1,200 r.p.m.
Bore and stroke : $5\frac{5}{8}$ inches × $4\frac{1}{2}$ inches.
Piston displacement : 447 cub. inches.
Compression ratio : 5.2 to 1.
B.M.E.P. : 110 lbs. per sq. inch.



THE 150 h.p. FAIRCHILD CAMINEZ ENGINE.—It will be noted that the side sectional view is not a true section but is so arranged as to show, above the main shaft, a section of a cylinder, and below the shaft a vertical section through the engine casing.





Commandante Franco

Alan Cobham

Marchese De Pinedo

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TELEPHONES: Regent 4728. Gerrard 2312.

Codes: A.B.C. 5th Ed. and Bentleys.

WORKS: Hendon (London). New Jersey (U.S.A.). Milan (Italy).

Ignition : 2 four-cylinder magnetos with 2 sparking plugs per cylinder.

Carburettor : 1 Stromberg NA-U-5 duplex.

Starter : Standard U.S. Air Service starter flange provided for mounting hand or electric starters.

Weight : 360 lbs. complete with airscrew hub and all accessories except starter.

The first engine has completed a 70-hour type test and its first trials in the air fitted into an Avro 504K have been very satisfactory.

Two further experimental engines which are expected to develop greater power and to be of reduced weight are nearly ready for test.

CANADIAN PARSIMONY.

The following report from the Vancouver correspondent of *The Times* mentions for the first time the attempted "economies" of the Canadian Federal Government in aviation and illustrates graphically the narrowness of mind of the average politician the World over.

While the more usual excuse for aeronautical economies is the "Locarno atmosphere" and the "horrors of war" there can be no possible grounds for such drastic cutting down of the Canadian Royal Air Force as is indicated in the following article, other than political graft and utter ignorance. Canada has, so far, been the one field where real commercial aviation, operated, it is true, by a Government Department, has been a success.

Judging from the number of flying hours and work accomplished during the past four or five years with the limited but efficient personnel and comparatively out-of-date equipment, if one excepts the few recent purchases from the Canadian Vickers Works, it would be hard to imagine where cuts could be made without entirely eliminating the R.C.A.F.

The Vancouver correspondent says :—

The decision of the Federal Government to eliminate the aerial patrol of the fishing grouuds of the British Columbia coast has caused considerable apprehension The allotment to the Royal Canadian Air Force station at Jericho Beach, near Vancouver, has been cut down from 300 flying hours last year to 150 hours in the current season. The present strength of the station here is five officers and 21 other ranks. This is to be reduced to two officers and nine men, while only one machine will be left here for regular service, with one other in reserve.

Officials of the Department of Fisheries here state frankly that the elimination of the aerial patrol means disaster for their service. With the market for salmon in a more healthy condition than it has been for many years, not one case from last year's pack remaining in the hands of the canners, and with much more severe restrictions on salmon fishing in Alaskan waters, there is more inducement than ever to break the British Columbian conservation laws.

There are 7,000 miles of rugged coastline on the mainland and island coasts of this province, and it is utterly impossible for a proper patrol to be kept up during the extended week-end close seasons by means of motor-boats. Last year 300 flying hours were devoted to this work and violations of the fishing laws were cut to a minimum.

The moral effect of the aerial patrol among the Indian and white fishermen was far more potent than could be achieved by a great fleet of slow-moving vessels. It is not practical for patrol boats with a speed of from eight to ten knots to contend against the poachers' vessels, most of which can make 12 to 16 knots.

On the uncharted west coast of the Queen Charlotte Islands, where much fishing is carried on, patrol boats are never used owing to the dangers of that coast, but the seaplanes were able to give efficient service. Three seaplanes were used last year, operating from two bases, one at Vancouver and the other at Seal Cove, just north of Prince Rupert. The cost per hour, for the 300 hours, was approximately $60 an hour

In an effort to replace the seaplanes, the Department are making arrangements to hire an additional 17 motor-boats at a cost for the season of $30,000. In an ordinary season, in addition to 27 Government-owned boats, the Department has from 30 to 50 boats hired for the season. There is already said to be jubilation in the northern fishing areas at the abandonment of the aerial patrol in a season of high prices such as the present promises to be.

For two years past the Provincial Forestry Department has made little or no use of aeroplanes for forest patrol during the fire hazard season, for the reason that the H.S.2L machines in use cannot climb to more than 5,000 ft., and this does not permit them to soar over the high mountains. In previous years the air patrol has proved its great value, but until up-to-date machines, with greater climbing capacity, which can be worked at a greatly reduced cost, are available, the Provincial Forestry Department refuses to make any arrangement with the Royal Canadian Air Force.

This is in striking contrast to the policy in Ontario, where, with timber wealth not so great as in British Columbia, the Provincial Government maintains its own Provincial Air Force of 19 aeroplanes and *personnel*. Last year the loss in British Columbia through forest fires amounted to more than $1,500,000 [£300,000], and the cost of fighting the fires was $619,000 [£123,800].

British Columbia has the only seaplane base in the Dominion and here are trained in this branch of work all the provisional flying officers of the R.C.A.F. This province offers a more varied field for flying operations than any other in the Dominion, and there is great disappointment at the drastic curtailment of air activities.

NIGHT FLYING AT CROYDON.

Air Ministry Notice to Airmen No. 26 of 1926 states :—

Royal Air Force aircraft will be flying in the neighbourhood of Croydon Aerodrome every evening during the month of June, Saturdays and Sundays excepted. These aircraft will extinguish their navigation lights after attaining a height of 4,000 feet. All pilots therefore flying at or above this height after sunset should keep a strict look out.

THE FLYING CLUBS.

The London Aeroplane Club.

The flying time for the week ending June 6 was 41 hrs. 35 mins.

The following members had flying instruction :—G. Quirk, B. B. Tucker, Miss O'Brien, T. H. O. Richardson, O. J. Tapper, G. Eady, S. O. Bradshaw, A. G. D. Alderson, J. H. Saffrey, R. C. Presland, F. S. Adams, O. J. Marstrand, J. C. Parkinson, G. Black, Capt. Godfrey, J. W. K. Malcolm, G. W. Hall, J. G. Links, C. E. V. Hewland, E. Cooper, E. D. Moss, Sir John Rhodes, H. Solomon, Dr. Wall, E. K. Blyth, O. J. Barros, J. A. Simson, Mrs. Eliott-Lynn.

The following members made solo flights for the first time :—E. D. Moss, G. Quirk, A. G. D. Alderson, S. O. Bradshaw, R. C. Presland.

The following members also made solo flights :—N. J. Hulbert, W. Hay, E. S. Brough, A. Lees, R. Malcolm, Major K. M. Beaumont, G. Wallcousins, W. Roche Kelly, H. Kennedy, G. H. Craig.

The following Associate Members were given joy rides :—Mrs. Malcolm, Miss Henderson, Mrs. Black.

Mr. G. T. Witcombe, the second pilot instructor, is away ill and Sq. Ldr. M. E. A. Wright kindly assisted in the flying instruction work. In order to cope with the increasing demand for instruction in flying, the Club has engaged S. L. F. St. Barbe as pilot instructor.

Mr. J. S. M. Michie, who has been with the Club since it started, as Ground Engineer, has obtained his Aviator's Certificate. The tests were successfully carried out at Lympne during the time the Club machines were there on strike transport.

Mrs. Eliott-Lynn has now qualified for a "B" Licence. The night flying test was done on Monday, May 31, between 22.00 hrs. and 22.30 hrs. Mrs. Lynn has done all her training at the London Aeroplane Club, and is the first member to qualify for a "B" Licence.

Sir John Rhodes, who gained his Aviator's Certificate last week, has taken delivery of his own D.H. Moth, and on Saturday last made a trip to Ostend.

Mrs. Sherwood Kelly and Mrs. Eliott-Lynn gave a flying "At-Home" at the Stag Lane Aerodrome on Tuesday last, when about 200 guests were present, over 100 of whom were given flights on machines lent by Mrs. Eliott-Lynn and Mr. Jones, Sir John Rhodes, The de Havilland Aircraft Company, Mr. Dudley Watt, and A.D.C. Aircraft Ltd.

A number of guests arrived by aeroplane, including Major Halford in a Nimbus D.H.IX, Capt. Boothman from the Central Flying School in a Service Moth, and Capt. Sparks of the London Aeroplane Club also in a Service machine. Capt. Broad gave an exhibition of flying which was very much appreciated.

[An interesting point arises in connection with such events as this. Should Club Moths be used for free joy-riding by pilots who have not qualified for "B" Licences? There are some who manage to get an "A" Licence but would never be allowed to hold a "B" Licence. Should guests, entirely ignorant of flying, be allowed to go up with them?

The claim is made that this is the first flying "At-Home" ever held in this country. As a matter of fact there were flying "At-Homes" before the War, 1914, if one's memory is correct. Also R.A.F. Messes have given "At-Homes," with flying, for many years. Only recently the Manchester Club gave a highly successful At-Home. And a year or two ago Mr. Muir, of the Surrey Flying Services, was engaged to give similar joy-rides to guests at an At-Home or some family celebration in the South Country—only the giver of the feast did not see fit to advertise the fact.—ED.]

The Yorkshire Aeroplane Club.

Report for week ending June 6.

This week has seen another soloist off, namely Mr. McCalman after some 7 hrs.' dual. We had great hopes of putting another member, Mr Fowler, through in a week after some 3 hrs. 50 mins. but a disaster prevented it.

An ex-Service pilot member had the misfortune to stall on a climbing turn on Saturday, a serious error for an old pilot., with the result that G-EBLS lies in a very critical state.

It is lucky that our second machine is ready and will be flown up during this week.

Total hours flown, 7 hrs. 43 mins.; dual, 5 hrs. 48 mins.; total solo, 1 hr. 55 mins.

The crash on Saturday naturally prevented our customary week end gathering.

[A cutting from a Leeds paper says that Mr. G. O. Wood of Headingly crashed the Club Moth on Saturday, June 5, through trying to do a climbing turn over the sheds at Sherburn. One imagines that he must have struck a down draught and have stalled. According to the paper he escaped with two well coloured eyes and a cut nose but the Moth abolished its undercarriage, its two lower wings and airscrew and engine bearings.—ED.]

The Midland Aero Club.

Report for week ending June 5.

The attendance at the Aerodrome has been fairly regular during the past few weeks, but owing to unsettled weather, and the fact that one machine has been unserviceable for some time with engine trouble, only a limited amount of flying has been done.

The Club has now five members ready for "A" Licence tests, and 10 *ab initio* solo pupils. Most of the flying work is done between the hours of 6 p.m. and 9 p.m. as very few members are able to get away from business during the day.

Both machines EBLW and EBLT, have nearly completed 200 hours each, and are still in excellent condition. But considerable trouble is being experienced with Cirrus cylinder heads.

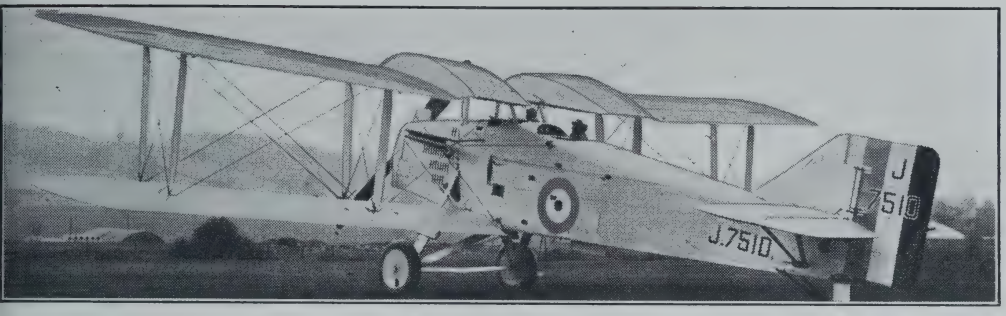
The Club's new hangar and quarters are progressing rapidly, and should be ready for occupation at the end of July.

AN A.D.C. ACHIEVEMENT.

On Monday afternoon Mr. Frank Courtney made an altitude test at Croydon on the Martinsyde-A.D.C.1 (Jaguar). Carrying oxygen apparatus he ascended to 25,500 feet in 30 minutes, when the pen on the barograph went out of action. At the time the machine was still climbing at a rate of 400 ft. per minute. Mr. Courtney will attempt to beat this height as soon as the sky clears.

At any rate Mr. Courtney must have beaten the Croydon altitude record.—G. D.

WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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YEOVIL.

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Aircraft 141, Yeovil.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 22; Tuesday, 25; Wednesday, 18; Thursday, 19; Friday, 22; Saturday, 24; Sunday, 8.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 68, passengers 409, freight 16 tons.

AIR UNION:
Paris—London: Machines 35, passengers 163, freight 10½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 16, passengers 62, freight 3 tons.

SABENA:
Brussels—London: Machines 14, passengers 49.

DEUTSCHE LUFTHANSA AG.:
Berlin—London: Machines 4, passengers 13.

SPECIAL:
Mr. Stephen Donoghue's S.E.C.M. (Mr. C. D. Barnard and owner up) from Paris.

Total number of trips by British Machines, 69, carrying 410 passengers. Foreign Machines, 69, carrying 287 passengers.

Comparative Figures:

Week ending June 6:
Machines, 138; Passengers, 697; Crews, 172; Total personnel, 869.

Corresponding week, 1925:
Machines, 150; Passengers, 614; Crews, 191; Total personnel, 805.

Corresponding week, 1924:
Machines, 117; Passengers, 372; Crews, 183; Total personnel, 555.

Corresponding week, 1923:
Machines, 166; Passengers, 345; Crews, 171; Total personnel, 516.

Corresponding week, 1922:
Machines, 134; Passengers, 258; Crews, 175; Total personnel, 432.

Corresponding week, 1921.
Machines, 97; Passengers, 299; Crews, 111; Total personnel, 410.

Corresponding week, 1920:
Machines, 97; Passengers, 299; Crews, 111; Total personnel, 410.

Croydon Notes.

On Friday last week, Lt.-Col. Minchin left Croydon on the Bristol Bloodhound (Jupiter VI) in an attempt to fly to Cairo in two days. He reached the neighbourhood of Dijon in very bad weather without a stop, and had to land in the fog. Later he reached Dijon aerodrome. Here the weather reports for Italy and Southern France were so bad that he decided it was no use to proceed. Consequently he flew back to Croydon. He will make another attempt when the weather is suitable. Still the little jaunt of 800 miles seems to show that the Jupiter is quite up to its old form.

Among the passengers to travel by Imperial Airways Ltd. to Brussels during the week was the comico-tragic Mr. A. J. Cook, the Miners' Secretary. Much amusement was caused by his being photographed embarking in the machine with the words "Imperial" all round him, for anything less Imperial than Mr. Cook it would be difficult to imagine. The engine failed to fail over the Channel, and he duly reached Brussels.

Some time ago a really good thriller, called "Broadcast," was published, in which an infamous Soviet Leader who did much harm to Great Britain frequently used the air lines to travel between London and Moscow. The book finished with a German pilot with a high sense of duty driving the Soviet Leader into the sea and killing himself into the bargain. The enthusiasm of Communists for flying might be damped if somebody would present them with copies of the book and at the same time remind them that parachutes for patriotic pilots are now available.

The Hampstead has been re-equipped with a new type of Jaguar engine and it is hoped that the worst troubles have now been overcome. Very careful tests are to be made.

Mr. Jupe, who owns the A.N.E.C. monoplane at Croydon, to which reference was made last week, called to inform one that one "was all up a gum-tree" about the machine. Therefore let us descend from the good Mr. Jupe's "gum tree" and explain. Mr. Jupe has bought the A.N.E.C. and is keeping it at Croydon, and there is no trouble with the engine.

Mr. Jupe states that he has been trying to buy 40 or 5 light aeroplanes of the Moth class for the Argentine. He tells one that, though money was no object, he was unable to obtain delivery of a batch of machines in this country and so he has placed the order in Germany.

Presumably everyone concerned can blame the Air Ministry for so cramping the style of our constructors that they are unable to construct. There must be some very good reason for refusing an order for 40 machines.

The progress of the reconstruction of the Aerodrome goes on. The bank and hedge on either side of Plough Lane are now being demolished, which makes one feel very naked and unprotected as one walks to the aerodrome from the trams.

Further experiments in night flying are, one hears, to be undertaken in the near future by Imperial Airways Ltd. with the assistance of the Vickers Vanguard (Rolls-Royce Condors).

At A.D.C. Aircraft Ltd., there has been much flying. Mr. Perry and Mr. Courtney have both done several tests on the Martinsyde A.D.C.1, the Nimbus-Martinsyde, and the Nimbus D.H.9. Mr. Perry was also testing the D.H.51 of the Seven Aero Club.—G. D.

THE AVENGER.

According to the daily press a new single-seat Avro Fighter with a Napier Lion engine has been successfully tested at Hamble and has shown a speed of nearly 180 m.p.h.

This evidently refers to the new Avro Avenger to which reference was made in THE AEROPLANE some weeks ago. It has been built by A. V. Roe and Co. Ltd. as a private venture, without the assistance of the Air Ministry—much the same as the Fairey Co. built the Fox.

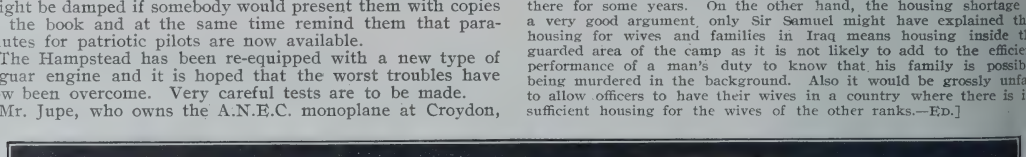
No details are yet available except that one hears that the machine is highly satisfactory. It may possibly be seen in public within the next few weeks.

AIR AFFAIRS IN PARLIAMENT.

R.A.F. WIVES IN IRAQ.

In the House of Commons on June 3, in reply to a question by CAPT. WEDGWOOD BENN, the SECRETARY OF STATE FOR AIR said that under present regulations R.A.F. Officers posted to Iraq were not allowed to take their wives and families with them, in view of the comparatively short tour of duty and the conditions of life in that country. CAPT. BENN said that he thought some of these officers had been out there for long periods and there did not appear to be any reason in the condition in the country why their wives should not join them. SAMUEL HOARE said that he had been very fully into the matter and that the term of service was only two years, that there was a shortage of housing accommodation and that we were in process of reducing the garrison and that if agreement was reached with Turkey there would be further substantial reductions in the near future.

[As a matter of fact according to the current Air Force List there are quite a few officers still in Iraq who have been there since 1919 and dozens who have been there since early 1923. The climate has always been considered good enough for the wives and families of Army officers. Also the argument about the reduction of the garrison is not much compensation for those who will certainly be left there for some years. On the other hand, the housing shortage is a very good argument, only Sir Samuel might have explained that housing for wives and families in Iraq means housing inside the guarded area of the camp as it is not likely to add to the efficient performance of a man's duty to know that his family is possibly being murdered in the background. Also it would be grossly unfair to allow officers to have their wives in a country where there is not sufficient housing for the wives of the other ranks.—ED.]



A NEW TYPE OF FAIREY-REED AIRSCREW.—Successful tests have just been made of a new type of Fairey-Reed Airscrew made by the Fairey Aviation Co. Ltd. These screws are made from a solid forging in light alloy and represent a constructional advance on other types. The use of this type of airscrew effects a notable reduction of the amount of noise made by an aeroplane, a considerable proportion of which has always been due to the airscrew. On its preliminary trials the new type Fairey-Reed screw was absolutely silent. Which suggests that more advantage can now be gained by silencing aircraft engines than has been the case hitherto.

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THE CAPE FLIGHT, R.A.F.

In the House of Commons on June 3, in reply to a question by Sir H. Brittain, the Secretary of State for Air said that the flight from Cairo to the Cape and back had been completed on May 27, when the four aircraft returned to Heliopolis one day in advance of the programme. A full report had not yet been received but he was able to say that the flight had been a complete success and that the four aircraft had accomplished the journey of approximately 10,500 miles without any change of engines. An official account of the flight would be available in due course.

THE R.A.F. AND THE STRIKE.

In the House of Commons on June 4, in reply to a question by Colonel Day, the Secretary of State for Air said that the number of R.A.F. aeroplanes used each day for the distribution of newspapers ranged from 5 to 15, the daily average being 8, and approximately 18 officers and 70 airmen had been engaged regularly or intermittently on work connected with the distribution. The number of mail bags that had been carried was 785. The total number of civil machines employed in newspaper distribution was 37, with approximately 45 pilots. The weight of mails carried was 2,611 lbs.

R.A.F. RECRUITING.

In the House of Commons on June 4, in reply to a question by Mr. Hore-Belisha, the Secretary of State for Air said that he expected an average enlistment of 62 recruits a month during 1926-27. All recruiting work except for aircraft apprentices was carried out by the London Recruiting Depôt, assisted by a small sub-depôt at Newcastle. The majority of the recruits were obtained as a result of correspondence, only the most suitable applicants being called to London for interview, trade test and attestation.

GERMAN TERRITORY.

In the House of Commons on May 20, in reply to a question by Lieut.-Cmdr. Kenworthy, the Secretary of State for Air said that an Air Traffic Agreement had been drawn up and agreed to by representatives of France and Germany for the opening up of a number of air lines over German territory and permitting French commercial aeroplanes to fly over Germany. But so far as he was aware the Agreement had not been signed and would not come into force until it had been formally ratified.

The position with regard to British commercial aeroplanes flying over German territory and the proposed air line from London to Prague, remained the same, but negotiations for a British-German Air Traffic Agreement were now in progress.

FOR THE NAUTICOS.

Not many people can afford to run a car and an aeroplane and a motor-boat at the same time. But a good many readers of this paper are interested in all kinds of motor locomotion and some of the people in the R.A.F. definitely have to work on motor-boats. To all such one can cordially recommend *The Motor Boat and Marine Motor Manual*, issued by the Temple Press Ltd., 7 to 15, Rosebery Avenue, London, E.C.1, at the low price of 5s.

Much of the material in the book deals with the elementary things of internal combustion engines, such as sparking plugs, carburettors, magnetos and so forth which are common to all motors. But even in those sections of the book there are bits of information which apply particularly to marine motors as distinct from air and land motors.

The sections which deal particularly with marine craft are of course done with the care and accuracy, and that outstanding ability to impart information, which characterises all the publications of the Temple Press. In any case the book is well worth reading by anybody who professes to be well informed on modern self-propelled vehicles.

TECHNICAL TRANSLATIONS.

People in the Aircraft Industry who want any translations done either from or into German, French, Italian or Spanish, can be put in touch with a technical translator who specialises on aeronautical subjects. Inquiries should be addressed to:—Translator, c/o The Aeroplane, 175, Piccadilly, London, W.1.

AERO-PHILATELIC MAPS.

Francis J. Field Ltd., the well-known stamp dealers, of Rosemount, Sutton Coldfield, Warwickshire, have just issued a very interesting packet of twenty-two cards which bear maps of all the air lines, past, present and projected, of the World. The firm has issued these for the use of aero-philatelists in illustrating their albums, so that each section of the album may have in it a map showing the route over which the particular stamps in that section have been used.

The idea seems distinctly good and the set of twenty-two cards, which comprise forty different maps, are well worth the price of 2s. post free.

CAIRO TO CAPE TOWN AND BACK.

The flight from Cairo to Cape Town and back, which was completed on May 28, by the Cape Flight of the Royal Air Force for the British Air Ministry, was the first occasion on which a formation of machines has flown over that particular route. The distance covered was 10,578 miles.

That the flight was carried out to programme is striking testimony to the reliability and efficiency of the British machines and engines, as there can be no doubt that when four machines are flying the question of luck cannot enter into the successful completion of such an arduous flight.

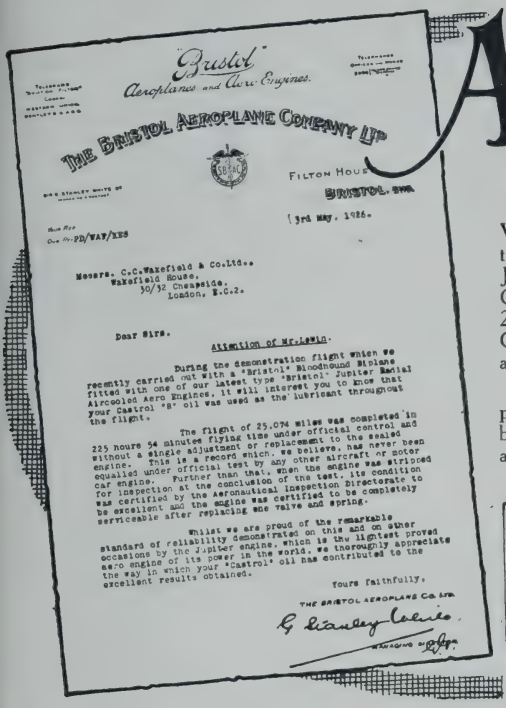
The continued confidence held in the water-cooled engine by the British Air Ministry is proved by the fact that for this long flight in tropical climates, demonstrating R.A.F. efficiency, the water-cooled Napier Lion engine was selected for use in the Fairey III Ds which made the journey.

THE NORTH POLE FLIGHT

The flight of the "Norge" over the North Pole is now a matter of history, but it will always be remembered as an epic of endurance, courage, and forethought. Pirelli, Ltd., are proud to have contributed not a little to this great achievement. All the main fabrics used in the construction of the "Norge" were manufactured by

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Dear Sirs,

Attention of Mr.Lewis.

During the demonstration flight which we recently carried out with a "Bristol" Bloodhound Biplane fitted with one of our latest type "Bristol" Jupiter Radial Aircooled Aero Engines, it will interest you to know that your Castrol "R" oil was used as the lubricant throughout the flight.

The flight of 25,074 miles was completed in 225 hours 54 minutes flying time under official control and without a single adjustment or replacement to the sealed engine. This is a record which, we believe, has never been equalled under official test by any other aircraft or motor car engine. Further than that, when the engine was stripped for inspection at the conclusion of the test, its condition was certified by the aeronautical inspection Directorate to be excellent and the engine was certified to be completely serviceable after replacing one valve and spring.

Whilst we are proud of the remarkable standard of reliability demonstrated on this and on other occasions by the Jupiter engine, which is the lightest proved aero engine of its power in the world, we thoroughly appreciate the way in which your "Castrol" oil has contributed to the excellent results obtained.

Yours faithfully,
THE BRISTOL AEROPLANE Co. Ltd.
G. Stanley Colwell
MANAGING DIRECTOR.

Appreciation

As an aircraft user, this letter should interest you. We have already recorded in our advertisements the phenomenal lack of wear in the "Bristol" Jupiter engine lubricated with Wakefield CASTROL throughout an official test of 25,074 miles; but here is the Bristol Aeroplane Co.'s own expression of complete and genuine satisfaction.

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AN IMPORTANT COMBINATION.

The following information is of outstanding interest in that it marks the recognition of Air Transport by the great land and water transport and supply organisations of France :—

COMPAGNIE FRANCAISE DU TOURISME.

Particulars of Compagnie Française du Tourisme were filed on May 21, pursuant to Section 274 of the Companies (Consolidated) Act. The capital is Fcs. 235,000 in 235 shares of Fcs 1,000 each. The company was incorporated in France on Sept. 13, 1919, to organise individual or collective journeys, to develop travelling and touring in France, etc.

The British address is Dorland House, 14, Regent Street, S.W.1, where F. J. Guillaume is authorised to accept service of process and notices on behalf of the company. The directors are :—

R. J. Paul, 134, Bould. Péreire, Paris Directeur Cie. des Chemins de fer du Midi.

J. Dal Diaz, 5, Rue de Teheran, Paris. President du Conseil d'Administration de la Cie. Transatlantique.

L. St. Ronde, 9, Rue de Prony, Paris. Directeur de la Ligne Maritime et Coloniale Française.

A. Pourcel, 278, Bould. Raspail, Paris. Cie. Paris-Lyon-Mediterranie.

G. Bourend, 95, Rue de Tome, Paris. Cie. des Chemins de fer de l'Est.

R. Bloch, 103, Bould. Malesherbes. Cie. des Ch. der fer de Paris-Orleans.

G. Vagogne, 88, Avenue des Ternes. Cie. des Ch. de fer du Nord.

L. Homolle, 5, Rue Theodore de Banville. Directeur Honoraire des Ch. de fer de l'Etat.

G. Barrier, Hotel Continental, Rue de Castiglione. Pres. de la Chambre Nationale de l'Hotellerie Française.

L. Blériot, Avenue Kleber, 55 and 57. Pres. du Conseil d'Adm'n de L'Air Union.

G. Phillippar, 18, Rue de Turin. Pres. du Conseil d'Adm'n. des Messageries Maritimes.

M. Bernard, 20, Rue de Londres. Pres. de la Chambre Syndicale des Eaux Minerales.

The file number is F.2537.

NEW COMPANIES.

BENTLEY MOTORS.—Bentley Motors, Limited, was registered as a "private" company on Mar. 6, with a nominal capital of £175,000 in 162,500 8 per cent. cumulative preference shares of £1 each and 250,000 ordinary shares of 1s. each. The preference shares have priority for return of capital. Each share confers one vote.

The objects are to acquire the business of a company of the same name (incorporated July 10, 1919, and now in liquidation), and to carry on the business of manufacturers of and dealers in motor-cars, chassis, motor vehicles, parts, fittings and accessories, aeroplane manufacturers, automobile store and garage keepers, promoters of race meetings and speed and trial tests for motorists, cyclists, and aviators, instructors in driving, etc. The first directors (to number not less than two or more than eight) are :—W. O. Bentley, 7, Pelham Crescent, Kensington, S.W.; H. Pike, 1, Parkside Gardens, Wimbledon, Surrey; Woolf Barnato, Ardenrun Hall, Lingfield, Surrey; J. K. Carruth, 24, Northampton Road, Croydon; R. Manners, 7, Altyre Road, Croydon. Qualification : £100 shares. Remuneration : As fixed by the company. Secretary : W. K. Forster. Registered office : Oxgate Lane, Edgware Road, N.W.2.

SATISFACTIONS.

HARROGATE AERODROME AND LAND DEVELOPMENT CO. LTD.—Satisfaction in full on May 11, 1926, of deposit of deeds dated July 2, 1925, securing all moneys due or to become due from the Company to Lloyds Bank Ltd., not exceeding £2,500.

MORTGAGES AND CHARGES.

THE LONDON AERO CLUB LTD.—Agreement to execute a debenture dated May 3, 1926, to secure advances not exceeding £2,000, charged on such of the Company's property, present and future, as may have been purchased in whole or in part either with money supplied by the President of the Air Council under the provisions of the agreement or with money received by virtue of any insurance (other than third party or employers' liability insurance) effected by the Company under the provisions of the said agreement. Holder : President of the Air Council.

PERSONAL NOTICES.

DEATHS.

JAMES.—On June 3, at Luton, as the result of a motor-cycle accident, AC. Reginald James, R.A.F., Henlow.

PAGE.—On June 3, at Luton, as the result of a motor-cycle accident, AC.1. Harry Page, R.A.F., Henlow.

ROBINSON.—On June 2, at Mundesley, Flt. Lt. H. N. C. Robinson, M.C., D.F.C., R.A.F., the dearly loved husband of Erica Robinson, aged 27.

MARRIAGE.

RICHARDS—WOODIN.—On June 2, at St. James's Church, Yarmouth, I.W., by Canon Judkins, Rector of Whippingham, Alfred Coombe Wall Richards, R.A.F., to Esther Mary Woodin.

FORTHCOMING MARRIAGE.

RUSSELL—BOVILL.—A marriage has been arranged, and will shortly take place, between Flt. Lt. Herbert Bainbrigge Russell, A.F.C., R.A.F., only surviving son of the late Mr. H. H. Russell, of Hawkes Bay, New Zealand, and Mrs. Russell, of 24, Argyll Mansions, Chelsea, S.W.3, and Margaret Ann, youngest daughter of Mr. and Mrs. George Bovill, of Rhydycrena, Bettws-y-Coed, North Wales.

BIRTHS.

BARNARD.—On June 4, at Kenley, to Captain and Mrs. F. L. Barnard—a son (Peter)

GRAHAM.—On June 2, at 1, Ladbroke Square, W.11, to Sq. Ldr. and Mrs. J. B Graham—a son.

MACKRELL.—On Apr. 11, at Newbury, Berks, to Irene, wife of Gyles Mackrell, D.F.C., of Calcutta—a son.

SPRIGGS.—On June 4, at "Montrose," Thames Ditton, to Gladys, wife of F. S. Spriggs, of the Hawker Engineering Co. Ltd.—a daughter.

WINN.—On May 18, to Freda (*née* Phizacklea), wife of Richard Horry Winn, R.A.F.—a daughter.

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THE AEROPLANE

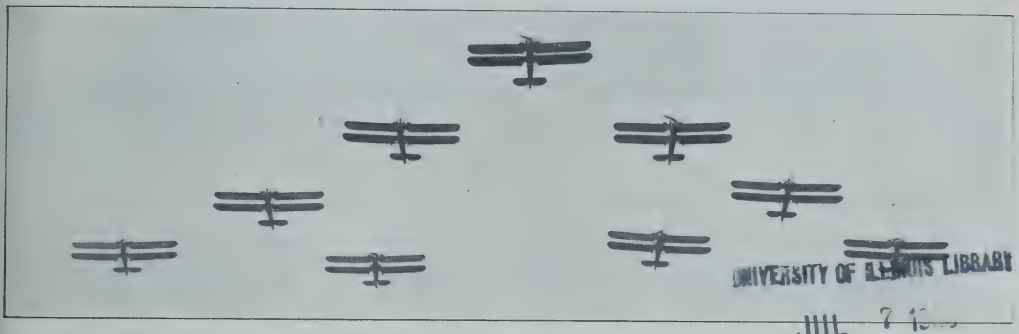
INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXX. No. 24. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"FRONT, FLANK AND REAR THE SQUADRONS SWEEP."

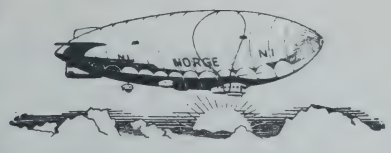
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SQUADRON FORMATION.—The Radio Telephone (R/T) order is—"Squadron, I repeat, Squadron, GO!" Each flight of three machines is in the Vee formation (known as "Vic," for R/T purposes) which is the standard cruising formation of a flight, and the flights themselves form a Vee on the Squadron Leader's flight. The machines are Fairey Fawns (Napier engines) of No. 100 (Bombing) Squadron, R.A.F.



MARCONI WIRELESS APPARATUS

Amundsen's flight in the airship Norge across the North Pole and Major Franco's aeroplane flight to South America have proved the immense value of Marconi wireless telegraph and direction finding apparatus to long distance flying expeditions, by providing all-important meteorological reports and valuable route-finding information.

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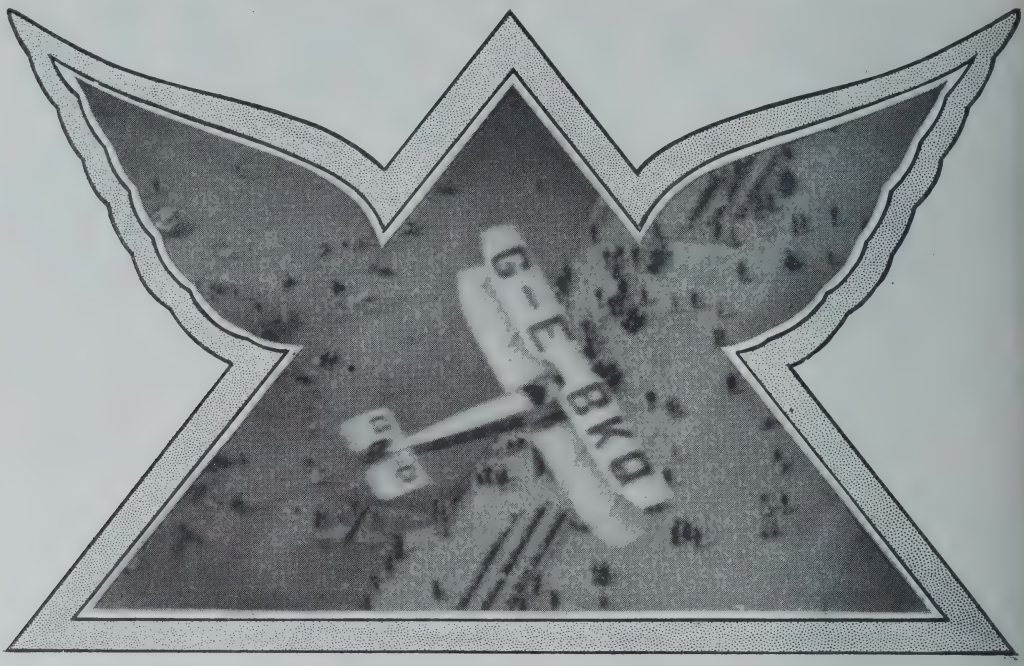
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JUNE 16, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 24.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
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ON THE DECLINE OF THE FRANK.

Quite one of the most amusing things that has happened in international Aviation for a long time has been the recent ass in the French Chamber of Deputies about the aircraft contracts for the French *Service d'Aviation Militaire*. We have been so accustomed in this country to hearing the Air Ministry held up by the anti-Baldwin or anti-Trenchard or anti-Somebody-Else Press as being the worst thing that ever happened, and we know so much about the real stupidity or incapacity of our own technical experts, that many people in this country have almost come to believe that, apart from the fine fighting spirit of the officers and men, and apart from the fact that our aeroplanes and engines are remarkably well built, we are actually in the position of a third-rate Air Power. Consequently there is a certain grim satisfaction in finding that another country has troubles of its own as bad as, if different from, ours.

Air Strength.

People who have axes to grind, or political plots to work, always insist on reckoning the comparative strengths of Air Forces by the number of machines possessed by each Power and not by the actual fighting strength. The truth is that machine strength, in mere numbers, has very little to do with fighting strength. And even machine performance is not a direct measure of fighting strength.

Nobody has agitated more than have writers in The Aeroplane for higher performance in our machines. This paper has always argued that we ought to have pursuit ships as fast as those of the Americans, and that we ought to have high-climbing machines as intercepter fighters, and that we ought to have high-speed bombers and that we ought to have modern two-seater fighters and general purpose machines which are as far in front of everything else of the period as were the Bristol Fighters when they first went into action at Easter, 1917. But we want them merely so that the personnel of the Royal Air Force may be worthily equipped.

There are some countries which would still be negligible as Air Powers even if they were equipped with aeroplanes whose performances, each in its own class, were 25 per cent. better than those of any other nation. There are some whose pilots are wonderfully skilful aviators but have an innate objection to fighting. There are others whose pilots can fly and fight but whose rank and file have no mechanical ability at all, with the result that their machines are never fit to stand hard service.

In others there is a percentage of men who are good pilots and good fighters though the majority, if not actually cowards, do at any rate prefer to do their fighting over their own territory. And there are yet others in which there is a percentage of extremely clever and competent mechanics while the bulk of the rank and file are mere machine-butchers.

The Strength of the R.A.F.

Knowing something of all the Air Forces in the World one can safely say that there is none in which the average fighting value of the personnel is anything like as high as it is in the Royal Air Force. During the War 1914-18, when other countries were booming their star turn pilots, apparently with the idea of stirring the residue to emulate their feats, the British Army steadfastly refused to advertise those pilots who did exceptionally well.

A certain number of Victoria Crosses were given. And quite a large number of R.F.C. officers, and R.N.A.S. officers for that matter, were made Companions of the Distinguished Service Order, but in the case of the D.S.O. the distinction was given quite as often for solid good work in command of units as it was for spectacular feats of air fighting. We achieved our superiority in the air by the excellent process of throwing out the least useful people rather than by encouraging those who were inclined to shine.

The Royal Air Force, when it came into being continued the same policy. And that policy has been continued since the outbreak of peace. Our worst pilots have been trained and trained till they can fly very nearly as well as our best. And the least intelligent of our mechanics have been educated till they can at any rate be trusted to do a decent job of work under the supervision of the highly skilled N.C.O.'s and Warrant Officers of the R.A.F.

The result is that the fighting strength of the Royal Air Force is out of all proportion to its machine strength or personnel strength and is equally out of proportion to the performance of its machines. Other nations may have machines



"THE ROAD TO HOME."—The arrival of the Cape Flight, R.A.F., at the R.A.F. Depot (Middle East) at Aboukir with their Fairey IIII.Ds (Napier engines), where the machines were fitted with floats. The photograph, taken by an enterprising N.C.O. of the R.A.F. Depot (Middle East) from the roof of a flight shed, shows how the personnel of the Depot turned out to welcome the expedition. Wing Commander Pulford is to be seen in the middle of the open space and the other members of the flight are in front of the machine on the left.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

which are a great deal faster and capable of much greater climb (chiefly because they are not loaded down like generous Christmas trees). But their speed and climb, in time of war, would be chiefly useful to them in helping them to get out of the way of the R.A.F.

Which in no way alters the fact that we do need faster machines and higher-climbing machines to catch our enemies when they try to escape, and also to intercept enemy machines when they venture to attack our bases, or the bases of our allies on the Continent. Nor does it alter the fact that we must go on agitating till we have got a big enough Air Force well enough equipped to give us precisely the same superiority in the air that the British Navy had in the days when navies were really of the first importance in securing World Power.

In fact, to put the position shortly, pitting the R.A.F. against any other European Air Force would be rather like putting a battalion of the Guards up against a brigade or two of Continental Territorials.

Our Competitors.

One may admit freely that the U.S. Army and Navy Air Services are intrinsically as good as ours. Their personnel is of precisely the same quality, though it lacks discipline—according to our ideas. And their machines have better performances, not because the American aircraft constructors are any better but because the U.S. technical officials are so much more intelligent.

America's real weakness lies in the small size of her Air Services compared with the enormous population of the United States, and in the fact that they are tied down to the two older Services and so, when war begins, will be used merely as subsidiary arms of those Services. Of course in the end, after the war has been going for a bit, America will develop a separate Air Force like ours. But there will be a lot of trouble before that happens, and the American Flying Services will have to go through all the agonies which ours did in the process of swopping horses while crossing the stream. But, of course, being a Nordic people, the Americans will come out on top at the finish in their own particular area of the Great War.

Of the European nations, certainly the most efficient Air Force is that of Holland. It is very small but within its limitations it is quite up to our standard. The Swedish Flying Services are also extremely good but very small, as are those of Norway and Denmark. They also are of pure Nordic stock and therefore thoroughly reliable.

Our Interest in the Franks.

The real reason why we in this country should be deeply interested in French Service aviation and in the fighting value of the Frankish people is because we have to reckon on French air strength in relation to the next great war.

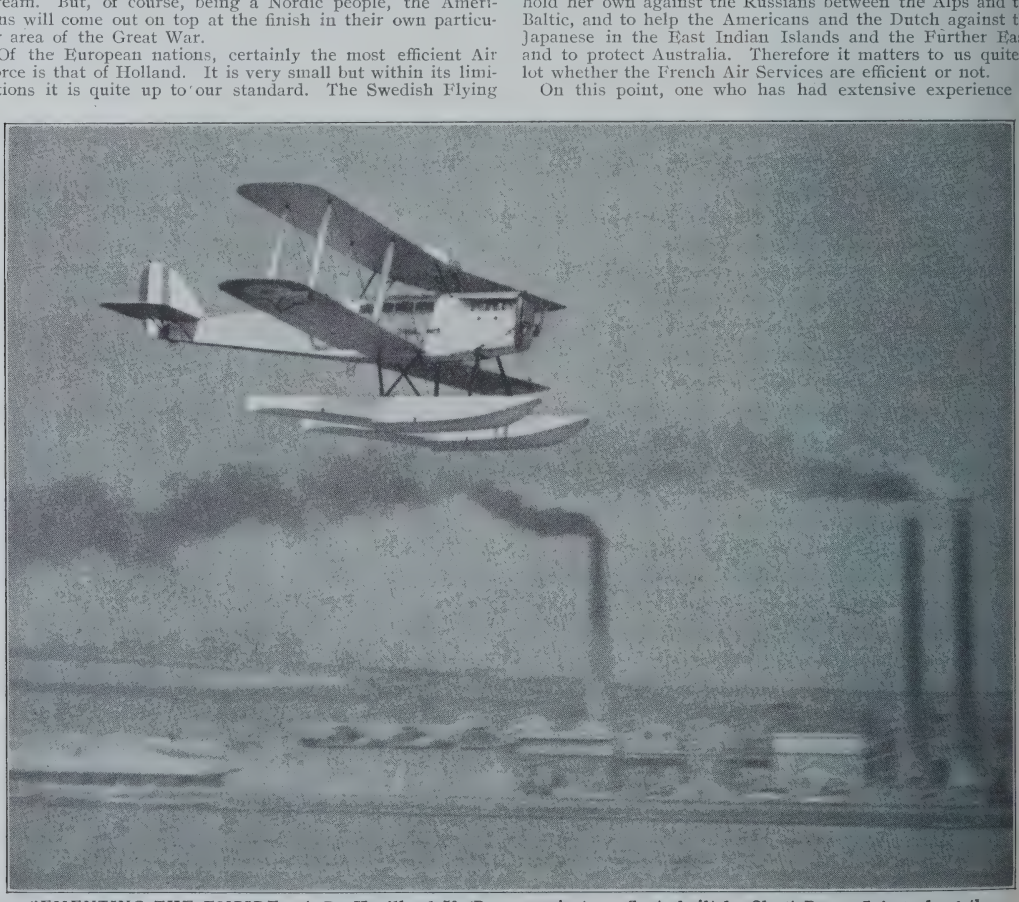
Those alarmists who are everlastingly holding up the enormous size of the French *Service d'Aviation Militaire* as a menace to this country are in fact playing an extraordinarily silly game. The said alarmists are generally people who are honestly trying to make this country the World's greatest Air Power. And they think that by holding up French Aviation as a bogey in Parliament and in the press they will scare the people of this country and their Parliamentary representatives into spending more money on the Air Force.

As a matter of fact, the French are never in the least likely to fight us, even though certain Anglo-phobic Mediterranean Frenchmen might like us to think that they want to do so. France is very much too vulnerable all along her coastline ever to think seriously of going to war with us. Even if there should be a revolution in France, as there certainly will be if any French Government tries to tax the French people sufficiently to pay the nation's debts, the resultant revolutionary Government would hardly be so idiotic as to go to war with us. The French Navy hardly counts at all as a serious fighting force even against the British Navy as cut down under the Washington Agreement.

There is certainly no need for us to worry about the French Air Force. The proper point of view is to regard France as an ally against Russia, and to a certain extent against Japan—in view of French possessions in the Far East such as Indo-China and Tonquin.

We want France to be as strong and as efficient as possible because we shall need all our own Air Force to help Germany hold her own against the Russians between the Alps and the Baltic, and to help the Americans and the Dutch against the Japanese in the East Indian Islands and the Further East, and to protect Australia. Therefore it matters to us quite a lot whether the French Air Services are efficient or not.

On this point, one who has had extensive experience of



CEMENTING THE EMPIRE.—A De Havilland 50 (Puma engine) on floats built by Short Bros., flying along the cement works on the Medway near the Short Works. The machine has been built to the order of the Australian Air Board for the conveyance of Government officials.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

Across the Andes on a Napier!

TWO Vickers "Vixen" machines belonging to the Chilean Government, carrying full load, recently made a remarkable flight from Buenos Aires across the Andes to Santiago in 8 hours 40 minutes.

These machines were fitted with Napier "Lion" engines.

In such a flight as this much depends upon the engine, but experienced pilots have confidence in the Napier as it has *proved* itself in actual service the most reliable, efficient and comfortable aero engine in the World.

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both the French and British Flying Services wrote some time ago :—

People imagine that numbers alone count in these matters. While a good French fitter will squeeze ten horse-power more out of an engine than his British opposite number, the rigger to the same aeroplane will inevitably exercise his wit on the *cables de commande de profondeur* and cross his rudder-wires, even if he has to tear the fin away to do so. Similarly, when the rigger is sound, the engine-fitter will as inevitably leave his tool kit and his private correspondence under the bonnet.

There are a good many people in France who regard The Aeroplane as being Frankophobe, or at any rate, anti-French. One is certainly not Frankophobe, for, as one pointed out some time ago, Frankophobe would mean being afraid of France. And there is certainly no need for us to be afraid of the French in any way. Our only cause for alarm is the fear that the fighting value of the Frank may decline.

Intelligent Criticism.

Not long ago that excellent Parisian paper, *L'Aéro-Sports*, devoted quite a long article to abusing The Aeroplane because one had pointed out, purely as a point of military interest, that the 37th Regiment of the *Service d'Aviation* had dropped 375 tons of bombs on the Riffs and that the result was about two hundred casualties—killed and wounded.

This was taken by *L'Aéro-Sports* as being an attack on the 37th Regiment. As a matter of fact it was merely a reflection on the futility of bombing mountain fastnesses.

We have had precisely similar experiences of our own in bombing among the Afghan Hills. Though we have certainly never expended such a vast amount of air strength on bombing Pathans as the French did on bombing the Riffs the percentage of casualties which we have caused has probably been just about as low. And if our French contemporary wants any confirmation of one's criticism one can refer it to the *Revue d'Artillerie*, a French military publication of considerable importance, which has had a good deal to say on the subject and has been considerably more caustic about aerial bombing than The Aeroplane has ever been.

L'Aéro-Sports asks what The Aeroplane would say if by chance the 37th Regiment were transferred to Cherbourg, and suggests that probably the movement would be regarded as a menace against England. Actually one would regard it as nothing of the sort. If one happened to be All-Powerful in England when such a movement was made one would issue an open invitation to the 37th Regiment, and any other French air units which happened to be within reach, to come over here and watch the R.A.F. at work for a while.

It always does French flying people good to come and see us fly. A few of the crack French pilots, "aces" of the Great War, came over here to the R.A.F. Pageant a few years ago, and were quite impressed by the flying of the R.A.F.

Also, not very long ago, when we were having that little trouble with the Turks, there was a French unit of some kind on an aerodrome near Constantinople. Our people used to fly every day and all day, but the Frenchmen very seldom did any flying at all. One of our R.A.F. officers happened to ask one of the French officers why they did so little flying. The reply was simply that in order to qualify for their flying pay they had to do a certain amount of flying every year. And the French officer asked what was the use of doing any more flying after they had once qualified for their pay? That attitude of mind hardly suggests a force which is likely to be much of a menace.

That, it is true, is not quite so bad as a scandal which occurred just before the outbreak of War in 1914 at one of the air stations somewhere on the French coast. In that instance it was shown that the officers of a station were selling their Service petrol to the local motor garages and were booking that petrol as having been consumed in qualifying for their flying pay.

The French Inquiry.

Under the circumstances it is not at all surprising that certain people in France should be digging up scandals in other directions connected with the *Service d'Aviation* and that a Committee should have been appointed to investigate these scandals—very much as our Air Investigation Committee was appointed in this country in 1916 to investigate the reasons why our pilots on the officially designed B.Es. were being shot down by the Germans on the Fokker monoplanes.

The chief complaint has been that the expenditure on the *Service d'Aviation* which was 100,000,000 francs in 1920, increased to 320,000,000 francs in 1925, and that there is nothing much to show for it.

Of course the declining value of the franc might account for expenditure increasing while the fighting value of the *Service d'Aviation* stood still. But so far as one can recollect the franc did not decline very much between 1920 and 1925. And anyhow the purchasing value of the franc in France has not even now declined to anything like the extent that the value has declined in international exchange. Therefore one can only assume that the decline has been in the Frank rather than in the franc.

In other words, the post-bellum Frenchman is not maintaining his wartime patriotism or effectiveness. Which is quite a serious matter for us, when one considers him as an ally in the next war.

Contract Scandals.

The attack on the Administration, *toujours l'Administration*, in the Chamber of Deputies, was led by a Monsieur Gamard, the *rapporteur* of the Committee. His chief complaint was that most of the enormous number of aeroplanes owned by the French Army were of old types and that the engines were of low horse power and of designs which existed at the end of the War in 1918. He said that most of the observation escadrilles were still equipped with the old Breguet 14.A.2 with 300 h.p. Renault engines.

In other words, there has been no progress in pursuit ships, bombardment machines have stood still, and observation machines have deteriorated.

Allegations were also made that certain firms, notably the Breguet firm and the Nieuport firm, have been unduly favoured by the section of the Army Administration which was responsible for placing contracts.

This is notably different from the position in our Air Ministry where, so far from the Contracts Department favouring any one particular firm, every firm seems to be equally in disfavour. They all have the same difficulty in extracting contracts from the Department. In order that the R.A.F. may have aeroplanes at all, firms have to build machines on mere verbal orders from the Equipment Department and stand the chance of having those orders disowned at a later date, as happened not very long ago in one important case in which the unfortunate maker of the machines was only able to get rid of them by delivering them as reconditioned machines at the contract price for reconditioning.

There is a curious parallel between the French Air Inquiry and our affair of 1916 in one charge which alleges that night bombardment in Morocco was only possible because the Army used machines (twin-engined Farmans, fitted with British Jupiter engines) borrowed from the Navy. Which reminds one of the Battle of the Somme when the R.F.C. were saved by Sopwith One-and-a-half-strutters borrowed from the R.N.A.S. But that was wartime muddle, it was not a decline of efficiency after nearly eight years of devastating peace.

All sorts of other scandals were dug up and the Minister of War had to admit that nearly two hundred aeroplanes had been supplied which had never been used.

It was also said that though French pilots had made astonishing trans-Continental flights, these were made on special machines which were not at all like the standard types supplied by the Army.

The Parliamentarians.

L'Aéro-Sports has been particularly amusing on the subject and one only wishes that it were possible to quote that paper extensively. Monsieur Painlévé, the Minister of War, and Monsieur Laurent-Eynac, the Under-Secretary for Aeronautics, apparently put up quite a good fight for their department, but the critics apparently scored rather heavily.

One of the most effective, naturally, was Monsieur Flandin, formerly Under-Secretary for Aeronautics and certainly one of the most polished and brilliant speakers in France. Of him *L'Aéro-Sports* said that he united in his person an orator of high class and a polemist of talent. He was at once the advocate of the House of Breguet, the President of the Aero Club of France, the former Under-Secretary for Aeronautics, a politician and the lieutenant of the Opposition.

There was apparently another curious likeness between this French Air Debate and those in our own Parliament, in that *L'Aéro-Sports* complains that in spite of the importance of the subject to the safety of France there was a very poor attendance in the Chamber.

More Inquiries.

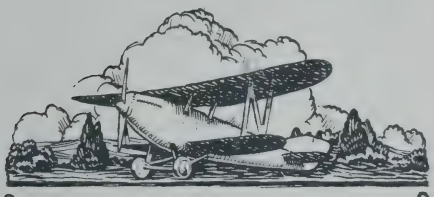
The net result of the Debate, which finished on June 10, was that the Chamber decided to appoint yet another Committee to report on military, naval and civil aviation and to study how economies may be made in expenditure. This reminds one of the Air Board which was appointed as the result of our Air Investigation Committee of 1916.

From that Air Board eventually came the Air Ministry, and thence the Royal Air Force—free and independent. One can only hope that History may yet again repeat itself and that in due course France may free its Air Service from military and naval control.

One wishes every success to this new Committee. Despite the most specious arguments of some of one's most valued friends, one still has a firm belief that, in order to make war efficiently in the air, an air force must be free to conduct its own operations—in co-operation with but not under the orders of the Army and the Fleet. And the sooner the French reorganise their air strength on those lines the better.

One can only hope that the decline of the franc and the decline of the Frank may soon cease and that together they may resume their normal value to the World at large.—C. G. G.

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This Trophy, given annually for the greatest achievement in aviation in the United States of America, has recently been awarded to Mr. S. A. Reed, in recognition of the outstanding successes of his all-metal Airscrew during the past year.

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ALL-METAL AIRSCREW

THE ROYAL AIR FORCE.

The London Gazette.

June 8.

General Duties Branch.—Air Commodore H. C. T. Dowding, C.M.G., is appointed Director of Training, Air Ministry (May 27).

Flg. Off. C. E. N. Guest is granted a perm. comn. in this rank (June 1). The following are granted S.S. comns. as Plt. Offs. on probation, with effect from and with seniority of, the dates indicated:—W. R. Baird (May 29); U. S. Mackay (May 30).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. L. Ottway (Feb. 28); E. C. G. Badcock (May 15). The following Plt. Offs. on probation are confirmed in rank (May 29):—L. C. Barling; W. H. Shorter.

Sq. Ldr. A. S. Maskell is placed on half-pay, Scale B (June 10); Flt. Lt. H. O. Brown, M.M., is placed on the retired list on account of ill-health (June 9).

The following Flg. Offs. are transferred to the Reserve:—Class A.—A. H. Padley (June 7); B. R. C. Coope (June 10); L. G. Pinnell (June 10). Class C.—A. C. W. Richards (June 10); A. Thomson (June 10).

The S.S. comn. of Plt. Off on probation N. E. C. Squire is terminated on cessation of duty (May 23).

Stores Branch.—Flg. Off. T. L. Grey is placed on the retired list on account of ill-health (June 9).

Medical Branch.—Flt. Lt. B. F. Haythornthwaite, M.B., B.A., is granted a perm. comn in this rank (June 9); Flg. Off. A. A. Townsend, M.B., is promoted to the rank of Flt. Lt. (May 27).

Reserve of Air Force Officers.—The following are granted comns. on probation in the General Duties Branch, in the ranks stated:—Class A.—Flg. Offs.—H. C. Adams, M.C., M. D. Barber, A. M. Diament (Lt., R.A.R.O.) (June 8). Class AA.—Plt. Off.—J. H. Gresham (May 26). J. S. M. Michie is granted a comn. in Class AA, General Duties Branch, as a Plt. Off. on probation (May 5) (substituted for the notification in the *Gazette* of May 18, 1926); Flg. Off. A. M. Fitzrandolph is confirmed in rank (June 8); Flg. Off. S. H. G. Trower is transferred from Class A to Class C (June 5); Flt. Lt. C. Y. Roberts is transferred from Class D2 to Class D1 (June 8); Flt. Lt. T. A. G. Hudson is transferred from Class D2 to Class D1 (Dec. 7, 1924) (substituted for the notification in the *Gazette* of Apr. 13, 1926); the comn. of Plt. Off. on probation K. P. L. Bowen is terminated on cessation of duty (May 3).

Appointments.

Week ending June 15.

General Duties Branch.—Squadron Leaders L. H. Slatter, O.B.E., D.S.C., D.F.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 24/6. W. H. Dunn, D.S.C., to R.A.F. Training Base, Leuchars, 28/5. R. T. Leather, A.F.C., to H.Q., Inland Area, Stanmore, 24/5.

Flight Lieutenants T. A. Langford-Sainsbury, D.F.C., A.F.C., to No. 15 Sqdn., Martlesham Heath, 25/5. S. P. Simpson, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 14/5. D. K. Cameron, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 20/5. B. K. D. Robertson, A.F.C., to Inland Water Transport, Iraq, 17/5. A. A. Ward, to No. 45 Sqdn., Iraq, 21/5. B. E. Harrison, A.F.C., to Air Ministry, Directorate of Organisation and Staff Duties, 11/6. W. F. Dickson, D.S.O., D.F.C., to R.A.F. Depot, Uxbridge, 1/6. S. Smith, D.C.M., to No. 1 School of T.T. (Apprentices), Halton, 14/6. H. G. P. Ovenden, to No. 4 F.T.S., Egypt, 23/5.

Flying Officers E. J. Protheroe, to H.Q., Air Defence of Great Britain, Uxbridge, 3/6. (Hon. Flt. Lt.) V. J. Somerset-Thomas, to No. 5 F.T.S., Sealand, 8/6. C. Mackenzie-Richards, to Experimental Section, R.A.E., Farnborough, 31/5. J. Bullock, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 30/4. (Hon. Flt. Lt.) W. F. Humphery, to Inland Water Transport, Iraq, 11/5. R. A. Ford, to No. 4 Arm. Car Coy., Iraq, 25/5. T. Brewin and A. E. Evans, D.F.C., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 22/5. H. A. Boniface, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 7/5. J. P. Cafferkey, to R.A.F. Depot, Uxbridge, 31/5. F. G. S. Mitchell, to Armament and Gunnery School, Eastchurch, 10/6. M. C. W. C. Flint, M.C., to No. 15 Sqdn., Martlesham Heath, 28/5. H. Walker, to No. 208 Sqdn., Egypt, 5/5. C. B. McIntyre, to Home Aircraft Depot, Henlow, 9/6.

Pilot Officers J. H. Leach, to R.A.F. Depot, Uxbridge, 9/6. H. F. G. Southey, to School of Naval Co-operation, Lee-on-Solent, 7/6. W. R. Baird, to No. 1 F.T.S., Netheravon, on appointment to a S.S. Comn. (on probation), 29/5. U. S. Mackay, to No. 1 F.T.S., Netheravon, on appointment to a S.S. Comn. (on probation), 30/5. W. A. Shorten, to No. 27 Sqdn., India, 18/5.

Medical Branch.—Group Captain H. Cooper, D.S.O., B.A., to H.Q., Air Defence of Great Britain, Uxbridge, 1/6.

Squadron Leaders H. B. Porteous, M.B., to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. K. Biggs, M.C., D.P.H., to H.Q., Inland Area, Stanmore, 1/6. J. H. Peck, M.D., D.P.H., to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. J. Rothwell, M.B., to H.Q., Inland Area, Stanmore, 1/6. J. I. T. Forbes, to H.Q., Wessex Bombing Area, Andover, 1/6. T. J. Kelly, M.C., B.A., to H.Q., Fighting Area, Kenley, 20/5.

Flight Lieutenants G. R. Nodwell, M.B., to R.A.F. Hospital, Halton, 6/6. W. G. Weston, M.B., to Home Aircraft Depot, Henlow, 1/6. J. G. Russell, M.B., B.A., to R.A.F. British Hospital, Iraq, 16/5. (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., to R.A.F. Depot, Uxbridge, 5/6. A. Dickson, M.B., to H.Q., India, 22/5. J. R. Crolius, M.B., to R.A.F. Hospital, Halton, 8/6.

Flying Officers L. I. Hyder, to R.A.F. Depot, Uxbridge, 1/7. S. F. Heatley, M.B., B.A., to Research Laboratory and M.O.S. of I., on appointment to a S.S. Comn., 2/6. A. A. Townsend, M.B., to No. 100 Sqdn., Spittlegate, 1/6. J. P. Hederman, to No. 43 Sqdn., Henlow, 1/6. R. S. MacLatchy, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 16/5. P. H. Perkins, to Research Laboratory and M.O.S., of I., on appointment to a S.S. Comn., 1/6. G. J. Griffiths, to R.A.F. Hospital, Cranwell, 21/6. A. F. Cook, to R.A.F. Hospital, Halton, 21/6.

Stores Branch.—Flight Lieutenant L. H. Vernon, to H.Q., Fighting Area, Kenley, 8/6. L. A. K. Butt, to Arm. and Gunnery School, Eastchurch, 1/6.

Accountant Branch.—Flying Officers S. C. George, to H.Q., Egypt, 1/6. W. J. Heneghan, to No. 70 Sqdn., Iraq, 19/5. D. J. Sherlock, to H.Q., Accountant Office, Iraq, 18/4. H. C. Roberts, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 23/5. J. Charles, to H.Q., Air Defence of Great Britain, Uxbridge, 1/6. D. F. A. Clarke, to No. 47 Sqdn., Egypt, 26/5.

Chaplains' Branch.—The Rev. M. K. MacLeod, M.A., F.S.A., to H.Q., Cranwell, on appointment to a S.S. Comn. for duty as Chaplain (Presby.), 1/4.

The Cape Flight, R.A.F.

The Cape Flight, R.A.F., under Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., left Aboukir, where the machines had been fitted with floats, and flew to Sollum on June 9. The Flight left Sollum on June 10 and arrived at Phaleron at 16.00 hours on the same day. The Flight landed at Corfu on June 12 to refuel. The arrangements at Corfu were carried out by an R.A.F. detachment from Malta. They left again for Brindisi on the same day. The Flight is expected to arrive at Lee-on-Solent on Monday, June 21.



HENLOW, R.A.F. STATION SPORTS.—The four top pictures show the four teams in the semi-finals of the tug-of-war. The final was won by the Engine Repair Section (seen in the middle left-hand picture. The bottom pictures illustrate the "boat-race" won by No. 43 (Fighter) Squadron.

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"Flight" Photograph

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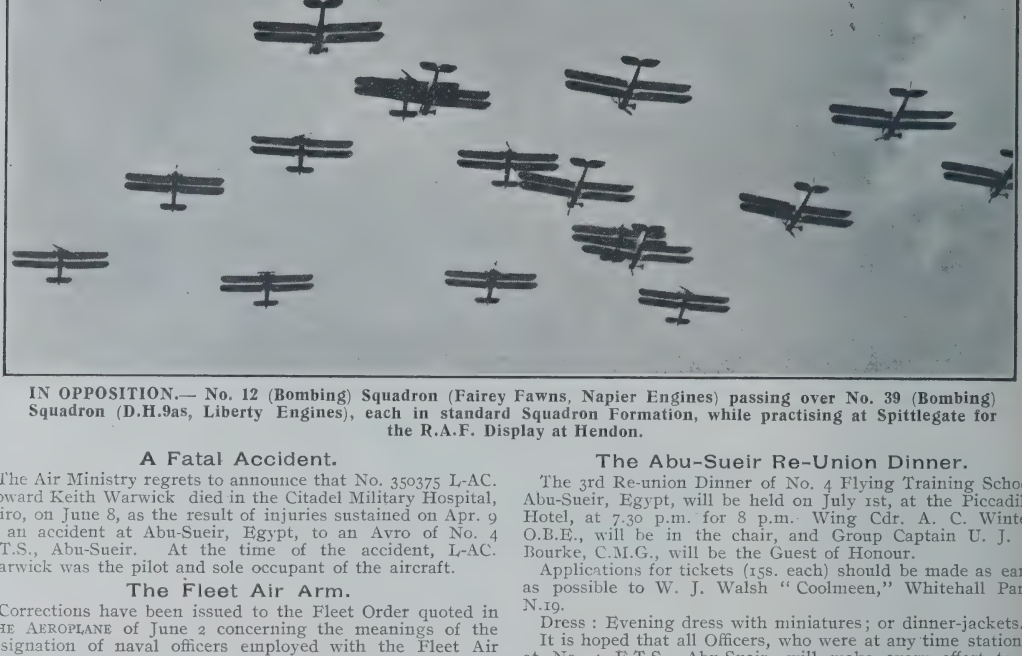
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IN OPPOSITION.— No. 12 (Bombing) Squadron (Fairey Fawns, Napier Engines) passing over No. 39 (Bombing) Squadron (D.H.9as, Liberty Engines), each in standard Squadron Formation, while practising at Spittlegate for the R.A.F. Display at Hendon.

A Fatal Accident.

The Air Ministry regrets to announce that No. 350375 L-AC. Howard Keith Warwick died in the Citadel Military Hospital, Cairo, on June 8, as the result of injuries sustained on Apr. 9 in an accident at Abu-Sueir, Egypt, to an Avro of No. 4 F.T.S., Abu-Sueir. At the time of the accident, L-AC. Warwick was the pilot and sole occupant of the aircraft.

The Fleet Air Arm.

Corrections have been issued to the Fleet Order quoted in THE AEROPLANE of June 2 concerning the meanings of the designation of naval officers employed with the Fleet Air Arm :—

The term "attached" will be applied to naval officers attached to the R.A.F. for service in the Fleet Air Arm. The term "lent" will apply to naval officers employed with the R.A.F. under naval conditions as regards pay and rank. The term "seconded" will denote those naval officers serving in the R.A.F. entirely under R.A.F. conditions. Although the terms will normally be used with these meanings, this will not affect their meanings under the Air Force Act, and care is to be taken to discriminate when they are used in some special sense.

[Thus one may assume that N.O.s attached to the R.A.F. are not very deeply attached to it, whereas former N.O.s who now hold high rank in the R.A.F. have developed a permanent attachment.—ED.]

'Ware Upavon.

Air Ministry Notice to Airmen, No. 27, of 1926, states :—

It is hereby notified :—Pilots who may have to land at Upavon are warned that a forty-five foot crane is being erected on or about June 9 between the buildings on the Southern aerodrome. The crane will be marked by red lights at night.

The Independent Force Dinner.

The seventh annual dinner of the Independent Force, R.A.F., was held at the Connaught Rooms on June 11. Air Chief Marshal Sir Hugh Trenchard was in the chair as usual, and, as usual, he made the briefest possible speech after dinner. He read letters of regret from various past and present officers overseas, and a cable from Leonard Miller, the historian of 55 Squadron (who is now in Vancouver, B.C.) wishing success to the gathering.

Sir Hugh regretted that there were less diners present than at the previous dinner, and asked everybody who was there to bring another next year. He said that the R.A.F. was a worthy successor to the Independent Force,—as witness the Cape Flight's journey under Wing Commander Pulford, which had then already reached Athens. This, he said, was an ordinary Service flight, and not a stunt.

He added that critics of the R.A.F. who wrote of the Royal Ground Force would soon find that the only member of the R.A.F. who did not go into the air was he who was then addressing them.

The Post-War Iraq Dinner.

A dinner will be held on July 3 (the night of the R.A.F. Display), at 8.45 for 9 p.m., at the Hotel Cecil, for R.A.F. officers who have served in Iraq since the Armistice.

Air-Marshal Sir John Salmond, K.C.B., C.M.G., D.S.O., A.F.C., has kindly consented to take the chair and Air Commodore A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., will act as Vice-Chairman.

Application for tickets (13s. 6d. each, exclusive of wines) should be made before June 26 to Flt. Lt. A. L. Chick, A.F.C., Room 564, Air Ministry. A remittance should be enclosed with the application and a statement of the Unit with which the officer served.

The Abu-Sueir Re-Union Dinner.

The 3rd Re-union Dinner of No. 4 Flying Training School, Abu-Sueir, Egypt, will be held on July 1st, at the Piccadilly Hotel, at 7.30 p.m. for 8 p.m. Wing Cdr. A. C. Winter, O.B.E., will be in the chair, and Group Captain U. J. D. Bourke, C.M.G., will be the Guest of Honour.

Applications for tickets (15s. each) should be made as early as possible to W. J. Walsh "Coolmeen," Whitehall Park, N.19.

Dress : Evening dress with miniatures; or dinner-jackets.

It is hoped that all Officers, who were at any time stationed at No. 4 F.T.S., Abu-Sueir, will make every effort to be present.

R.A.F. SPORTS.

Henlow Station Sports.

The Annual Athletic Meeting was held at Henlow on June 9.

The weather was perfect and the R.A.F. Central Band added to the enjoyment of the afternoon. The Station humorists provided continual entertainment as clowns, comic policemen, etc. A loud-speaking crocodile, with a seven-valve set in his interior and an aerial like a spider's web betwen his up-turned nose and tail, did good work and recalled memories of the beast in "Peter Pan" which haunted Captain Hook.

At the conclusion of the Sports the prizes were presented by Mrs. D. A. Oliver.

The winners of the various events were :—

100 *Yards Flat*—L-AC. Bellefontaine; *Putting-the Shot*—AC.1. Ray; *Half-mile*—AC 2. Hoare; *Pillow Fight*—AC.2. Watts; 220 *Yards Flat*—AC.1. Thomas; *High Jump*—AC.2. Norcott; *One Mile Flat*—AC.1. White; *Boot and Tunic Race*—L-AC. Bills; *Tug-of-War*—Engine Repair Section; *Inter-Section Relay*—Engine Repair Section (a); *Egg and Spoon Race*—Mrs. Shutes; *Officers' Race*—Flt. Lt. Scott; *Boys' Race*—Peter Glanville; *Long Jump*—Flt. Lt. Scott; *Obstacle Race*—L-AC. Blackmore; *W.O.s and Sjts.' Race*—F-S. Barber; *Inter-Section Boat Race*—43 Sqdn.; 440 *Yards Flat*—AC.1. Neale; *Three Miles*—L-AC. Coveney; *Girls' Race*—Violet Ansell; 120 *Yards Hurdles*—AC.2. Peachey; 80 *Yards Flat* (*Officers' Wives*)—Mrs. Pettingell; *Mile Relay* (*Open*)—Uxbridge Depot; *Two Miles' Walk*—AC.1. Golightly; *Band Race*—Bdmn. Williams; *Consolation Race*—AC.1. Hopgood; *Sweep and Miller*—Aeroplane Repair Section.

Manston Station Sports.

The Manston Annual Athletic Sports were held on June 10. The weather conditions were appalling, all the hurdles and side-shows were blown down by the gale and torrential downpours of rain at intervals of ten minutes. In spite of this the programme was carried out and the performances were surprisingly good.

The Inter-Unit Cup was won by No. 1 S.S. (Carpenters) with 76 points. No. 2 Squadron were second with 46½ points and No. 9 Squadron third with 25½ points.

The *Victor Ludorum* Cup was won by AC. Sanderson (14 points). Flg. Off. Cannon was second (10 points). The winners of the various events were :—

One Mile, Team and Individual—1, S.S. Team and AC. Sanderson; 880 *Yards, Individual*—AC. Sanderson; 440 *Yards, Individual*—AC. Parrish; 220 *Yards, Individual*—Flg Off. Cannon; 100 *Yards, Individual*—AC. Blythe; *Three Miles, Individual*—AC. Sanderson; *Officers' Race*—Group Capt. the Rev R E. V. Hanson; *Two Miles' Walk*—AC. Sanderson.

High Jump, Individual—AC. Miller; *Long Jump, Individual*—Flg. Off. Cannon; 120 *Yards' Hurdles, Individual*—Flt. Lt. Forrest; *Putting-the-Shot, Individual*—Flg. Off. Chichester; *Throwing the Cricket Ball*—AC. Steele; *Obstacle. Race*—AC. Hogan; *Open Half-mile*—Sjt. Day (Lancs. Fus.); *Sjts.' Mess Race*—Sjt. Jump.

Tug-of-War, R.A.F. Units— 1, S.S. (Carpenters); *Tug-of-War, Open*,

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The M.T. Depot Sports

The Annual Athletic Sports of the Mechanical Transport Depôt, Shrewsbury, were held on June 10, in showery weather. A good afternoon's sport was seen and an excellent programme of music was provided by the R.A.F. Central Band under Flt. Lt. Amers.

At the conclusion of the Sports the prizes were presented by Mrs. Mounsey. The winners of the various events were :—

100 *Yards*—AC. Wornell; 440 *Yards*—AC. Cooper; 220 *Yards*—L-AC. Olney; *One Mile, open*—C. Rowley (S.A.A.C.); 440 *Yards, open*—J. Cooke (S.A.A.C.); *Officers' Race*—Flg. Off. Coyle; *W.O. and Sjts.' Race*—F-S Warwick; *Corporals' Race*—Cpl. Crossman; *Civil Subordinates' Race*—J. Smith; *Tilting the Ring on Motor-cycles*—Cpl. Case; *Slow Cycle Race*—AC Gilmour; *Obstacle Race*—AC. Biggerstaff.

Tug-of-War—No. 2 Section; *One Mile, Team*—No. 4 Section; *Cycle Relay*—No. 4 Section; *Two Miles' Relay*—No 4 Section; *One Mile Relay*—No. 1 Section; *Hurdles, Relay*—No. 2 Section; 440 *Yards, Relay*—No. 2 Section; *Section Race*—No. 1 Section; *Boat Race*—No. 4 Section.

R.A.F. in Parliament.

USEFUL EMPLOYMENT OF AIRCRAFT.

In the House of Commons on June 9, Col. Day asked the Secretary of State the cost of conveying the R.A.F Cricket Team from Manston to Eastchurch by means of R.A.F. aeroplanes. Sir Samuel Hoare said that no special expenditure was involved as the team merely occupied seats which were available in the normal course of Service training.

THE ANCIENT MARINER AGAIN.

In the House of Commons on June 9, in reply to a question by Col. Day, the Secretary of State for Air said that the accidental release of a smoke-bomb at Caterham was under investigation. From the evidence so far available such an accident was extremely unlikely to occur again. He did not think that a single isolated case of this kind would justify the dislocation of training and increased expense which would be involved in sending home defence fighter squadrons to carry out their training with dummy bombs at stations other than their own.

The Royal Canadian Air Force.

A correspondent of The Aeroplane writes :—

The Dominion Government's intention to make considerable reductions in the personnel and equipment of the C.R.A.F. is causing much controversy in the Canadian Press. The leading newspapers are unanimous in the opinion that, although public money should not be spent on useless military flying, careful discrimination should be made between this, and the productive flying that is done by some units.

In Manitoba and British Columbia, they maintain, good work is done by aircraft in the detection and suppression of forest fires, although this work is officially regarded by the Government as "military flying."

Many officers are to be retired at a short notice without gratuities or any other form of compensation, and as Civil Aviation is as yet an untended infant in Canada this will involve considerable hardship to trained pilots who have no experience of other work.

At Jericho Beach, Vancouver, a C.R.A.F. marine flying station, there were maintained and flown until recently three flying boats of American design. Although these aircraft had a particularly low performance, they were effectually employed in the suppression of narcotic smuggling, the detection of forest fires, and the guarding of the prohibited fishing areas around the British Columbian coast. By the new economy scheme two of these aircraft will be taken out of service, and the personnel reduced accordingly.

The personnel of the C.R.A.F. to-day is 61 officers and 262 other ranks, and although the exact number to be retired and discharged is not yet available, it is known to be considerable.

Activities of the Canadian Fairchild Co.

The Fairchild Aerial Surveys (of Canada) Ltd. has formed a new subsidiary company, known as the Elliott-Fairchild Air Service, for the purpose of carrying freight and passengers in the gold-bearing area of Red Lake, Ont. They are using a seven-seater Aeromarine metal-hull flying boat equipped with one 400 h.p. Liberty engine. To assist the air transportation, two high-powered cruiser-type launches are used to carry all heavy machinery and supplies.

The Fairchild Aerial Surveys (of Canada), Ltd. are also operating two H.S.2Ls in the Rouyn district goldfields, Quebec. Their other equipment, consisting of a Huff-Daland seaplane and a Curtiss flying boat are booked up for the Summer on work in Eastern Quebec. These two aircraft handle all the mapping and sketching east of Grand' Mere.

For the purpose of handling similar work west of Grand Mere, the company have placed an order for a Canadian Vickers Vedette three-seater flying boat fitted with one 200 h.p. Wright Whirlwind engine. This machine, which will also be used for timber sketching and photography, has a very good performance and repeatedly gets off the water in four seconds.

During the Winter of 1925-26 the Huff-Daland Petrel made a flight from Ottawa to the extreme end of the Gaspé peninsula, a distance of 640 miles, which is probably the longest winter flight ever made in Canada. A photographic contract was carried out in the Gaspé peninsula during the early part of 1926, under the most difficult conditions of country, owing to the high hills and almost complete absence of lakes or open country on which to land. In addition seven feet of snow and temperatures down to thirty degrees below zero, were regularly encountered.

The Antarctic in the Arctic.

The accompanying photograph shows the Avro "Antarctic" seaplane, with 80 h.p. Le Rhône engine, originally built for Sir Ernest Shackleton's Antarctic Expedition, which is now being used for seal-spotting by the Newfoundland Sealing Fleet. With the machine are Mr. Bernard Brunton, of C. V. Martins and Sons, of London, and Mr. C. S. Caldwell, the pilot-mechanic who flies and maintains the machine.

The machine, as may be seen, is now equipped with skis. She carries fuel for two hours, pilot and passenger, a small tent, primus stove, and 10 lbs. of rations in case of a forced landing.

Mr. Caldwell remarks that he would like to have a machine with a radial air-cooled engine for this job and would be glad to hear from any manufacturers who have machines and engines which they would like tested out under real service conditions of this kind by a pilot-mechanician who would look after them properly.

The sealing season is during March. The machine is carried fully rigged, ready for flying, on a platform on a mother-ship and is carried to the scene of operations, usually in the vicinity of Belle Isle Straits of the Coast of Labrador.

Mr. Caldwell says that during the five weeks which is the usual duration of the trip the weather is usually cold and stormy, and in the 1926 season there were approximately 30 per cent. flying days. It must be remembered that flying days are limited by two factors, namely, weather and ice. Good sheets of ice are not always available and at times a pilot is tempted to use under-sized aerodromes.

The mother-ship this year was the *s.s. Beothic*. At one time she became jammed and the crew had to blast a heavy sheet of ice away from the bow before she could clear herself. The crew consisted of 230 men and between them they killed 50,000 seals, which produced approximately 100 tons of fat and skins.

Incidentally part of the aeroplane's job, besides actually spotting where the seal packs are located, is to find leads of water in the ice through which the ship can extricate herself or penetrate further in the direction of the seal packs. When a seal pack is located, the news of its locality is broadcast from the mother-ship to all the other sealing ships of the fleet.



STILL FLYING.—The Avro Antarctic (80 h.p. Le Rhone) built for Sir Ernest Shackleton's South Pole Expedition and now used for seal hunting.

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THE METAL-CLAD AIRSHIP.

The Council of the Institution of Aeronautical Engineers is to be congratulated upon having seized the fleeting opportunity presented by Mr. Ralph Upson's presence in this country, and in arranging for a meeting at which he could outline the work of the Aircraft Development Corporation of Detroit in developing an entirely new type of rigid airship. The whole of the arrangements had of necessity to be made at only a few days' notice, most of the negotiations were carried out by telephone, and the decision to hold the meeting was only concluded on Tuesday morning, June 1, and in the interval the Institution had sufficiently advertised it to secure quite a good audience on the evening of Friday, June 4.

Mr. Upson said that the firm with which he was connected came into being some years ago, and has as its guiding impulse the desire to develop the airship as a safe and economical vessel. There was a very widespread misconception as to the position in America. That country's possession of certain helium supplies had been widely advertised and it was suggested that America could fill all the airships she was likely to want with this gas, and that this gas at once gave her the chance of producing safe airships. In fact there was not enough helium for this purpose, and what there was was far too costly. Even assuming the difficulties of quantity and cost overcome, helium had the grave disadvantage of a deficiency in gross lift, compared to hydrogen, of about 10 per cent. Although 10 per cent. sounded very little, 10 per cent. of gross lift was 20 per cent. of disposable lift. If one took into account fixed items, such as weight of crew, stores, fuel, furnishings for passengers, the effect was that a hydrogen-filled ship had twice the range with a given pay load, or carried twice the useful load over the same range under conditions such as would be met in commercial operation.

Their object, therefore, was to attempt to develop a safe hydrogen ship. As a rough analogy with the fact that petrol was not regarded as dangerous when carried in a proper metal container, they thought that hydrogen could be regarded as safe if it would be contained in a metal-cased ship. Preliminary considerations indicated duralumin as the best available material. Weight for weight it was stronger than any airship fabric, it was immune from the light damage which occurred to all known fabrics, and if they would find a reasonable protective coating it would not suffer from weather.

From the practical point of view it was obvious that to keep the structure-weight of a metal-clad ship down to the lowest possible limit they must use the skin plating as part of the structure, following somewhat the lines of ship construction where neither the plating nor the framing by itself formed a structure, but each supplemented the other.

It was obvious that with the usual form of airship hull of very fine lines the ratio of skin surface to volume was so high that the skin would become impossibly thin. By using a hull of very much bluffer form, the skin area to volume ratio was greatly reduced, and the general magnitude of the main stresses was reduced. It was however generally supposed that a bluff form would have a high resistance and moreover would not easily be stabilised and controlled.

The problem was attacked by the application of both theory and experiment. Finally a shape known as the E.H. curve, from the fact that it was compounded of elliptical and hyperbolic curves, was evolved and tested. With a length diameter ratio of under 3 this shape had a lower resistance for equal volume than previous airship hulls with a fineness ratio of 7 to 8. This shape however could not be stabilised by the conventional four-fin type of tail, and further research and experiment was necessary to find a fin arrangement which should do so. Finally, an arrangement of eight fins, each of small dimensions, arranged surprisingly far forward of the stern of the body was found which gave better stability than that attained by the conventional type of tail.

The actual structural design adopted involves the use of a series of transverse circular frames braced by suitable wiring to secure that they shall remain circular, to which all direct loads are transmitted. Mathematical analysis shows that under these conditions the only important load carried by the skin between frames is a circumferential shear stress, which has no tendency to distort the skin from its circular form. Secondary stresses tending to cause local deformation of the skin do exist, but the curved metal skin is quite able to take care of these.

The first design for a metal clad airship that has worked out in any detail was for a ship of 1,600,000 cubic feet, as it was believed that this was the smallest size in which such a ship could be built with enough disposable load to be useful even for demonstration purposes. When it became possible to analyse the weights of this ship the designers were surprised to find that it was likely to be appreciably lighter than any fabric-covered type, and that consequently a much smaller type could be built as an initial experiment. As a result this ship was abandoned and the design of a small demonstration ship of 200,000 cubic feet was put in hand.

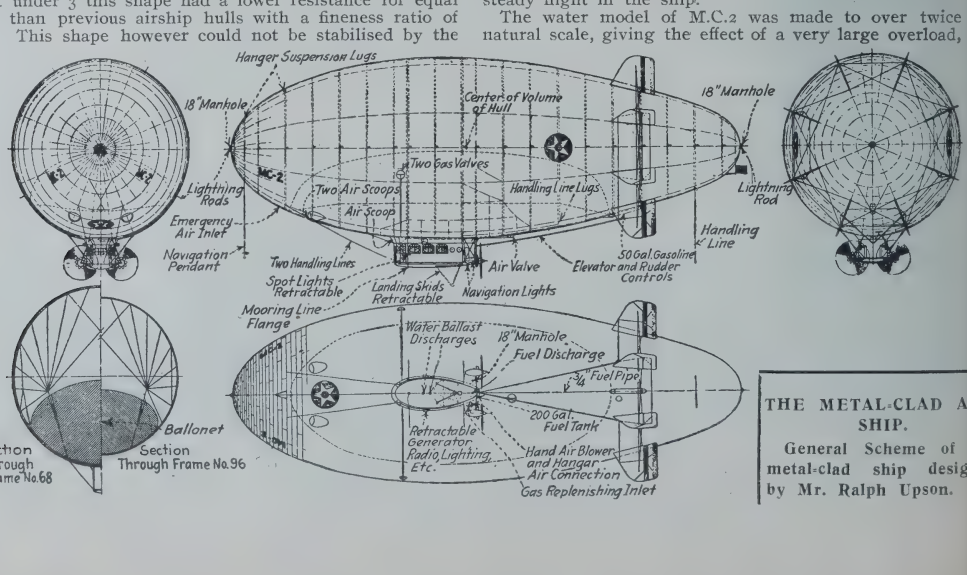
This ship, M.C.2, is now being built and it is hoped will be completed some time in 1927. It is well below the size of any previous type of rigid airship that has successfully flown, therefore, if successful, it will be a very convincing demonstration of the possibilities of this new type of airship.

In addition to the purely aerodynamic work involved in discovering methods of stabilising, etc., a large amount of research work bearing upon the aerodynamic loads which may be encountered has been carried out. In the first place estimates of these loads were made from fundamental hydrodynamic principles, and were afterwards checked so far as is possible by wind-tunnel tests.

Secondly the problem of stressing the actual structure to be employed had to be tackled. Usually speaking the stressing of a rigid airship frame is an exceedingly difficult problem, because such a structure is multiply redundant, that is to say there are a number of alternative members available to resist any given load and it is practically impossible to determine how the stresses will actually distribute themselves over those alternative members. With a continuous skin, there is the equivalent of an infinite number of members and it might be thought that the problem became even less capable of resolution. In fact it became much simpler, and although stressing such a ship is a laborious process, it is a problem susceptible of precise mathematical treatment.

The mathematical determination of stresses has been checked by the construction of what is known as a water model. This is really a scale model of the ship's structure, inflated with water, and suspended upside-down from the points to which the normal (weight) loads are attached. If such a model is built to what is known as the natural scale —a scale which depends on the relation between the weight of a cubic foot of water and the lift of a cubic foot of gas— stresses in the model are a perfect reproduction of those in steady flight in the ship.

The water model of M.C.2 was made to over twice the natural scale, giving the effect of a very large overload, and



THE METAL-CLAD AIRSHIP.

General Scheme of the metal-clad ship designed by Mr. Ralph Upson.

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A GLOSTER "GAMECOCK" LANDING AT BROCKWORTH. *Photo by "Flight."*

THE ABOVE PHOTOGRAPH SHEWS THE CLEAN DESIGN OF THE GLOSTER GAMECOCK WITH JUPITER ENGINE.

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a very much greater excess of internal pressure. The result of these tests checked so closely with the mathematical analysis that it is believed that for future ships the water model tests will be unnecessary.

In addition a large number of tests on individual structural members have been made, the problems of producing duralumin in the required very thin sheets have been overcome, tests have developed a satisfactory protective coating, and an automatic rivetting machine for rivetting the seams has been designed and made.

In order to get a gas-tight joint, a lap joint with three rows of rivets, each about 1-32 inch diameter, spaced about ¼ inch apart, was necessary in the 8-1,000-inch thick skin of M.C.2. This means something like 3,000,000 rivets in the complete ship, and it is obvious that hand rivetting is quite out of the question. Details of the machine devised are not available, but it is understood that it is not unlike a sewing machine in its action. Three "needles" operate simultaneously and punch three holes, and pull a duralumin wire through these holes. The wire is then cut off and a head pressed on each side. Each machine will put in 5,000 rivets per hour, giving a seam with a strength of about 350 lbs. per inch width.

Commander Boothby, in the discussion, said that three fundamental points suggested themselves for criticism. The large ratio of diameter to length was primarily used to keep down the skin weight. But in a really large ship it would not be possible to use a ratio of three or less, and therefore there might be difficulties with larger ships.

As far as he could understand the structural problems the maximum local compressive stress in the skin was a determining factor in the strength of a ship of this type. If these stresses became large one would naturally thicken the skin locally, and this came back to more or less Zeppelin practice.

Finally, the metal-clad structure seemed to be dependent on the internal gas pressure on the skin. What would happen in a large ship if one gas-bag deflated?

Mr. Upson in reply said that the very low fineness ratio made the very small ship possible. It was quite true that one could not afford large diameters in large ships, but he would be surprised if future ships went to a length much more than six diameters. The bigger the ship, the less important the skin weight, and therefore the finer it was practicable to make it.

Internal pressure was used in M.C.2, but only to keep the thin skin from vibrating under air forces. It was not essential for the strength of the structure, and the pressure was provided by the ship's own speed.

In general the usual type of ship had an outer cover, a series of bracing wires, a netting over the gas-bags and the gas-bag fabric doing work which was all done by the skin of the metal-clad type. The metal skin was not very much heavier than the sum of these items, and it was able to carry stresses which these members could not carry, and therefore replaced part of the rigid framing.

Col. J. T. C. Moore-Brabazon, President of the Institution and Chairman, expressed the thanks of the Institute to Mr. Upson for his very interesting talk. He personally felt that the airship was the only gentlemanly method of air transport and he was very glad to hear of such an entirely novel method of building safer and better airships. He could not help hoping however that a finer and more graceful shape than suggested by a three to one fineness ratio would be adopted.

ABOUT THOSE AIRSHIPS.

Writing on the subject of the recent article "On The Coming of Age of the British Airship" in this paper Lieut.-Colonel W. Lockwood Marsh, late R.A.F., says that it is not quite accurate to state that it was *Nulli Secundus II* which flew from Farnborough to London on October 7, 1907. He says that it was in fact *Nulli Secundus I* which made the trip. Also he says that it is not correct to state that the ship perished in a gale after landing at the Crystal Palace. Actually the envelope was ripped purposely owing to the rising wind and the ship was taken back by road to Farnborough, where she reappeared as *Nulli Secundus II* on Aug. 13, 1908.

No doubt Colonel Marsh is right about the numbering of the two ships But one is fairly certain that it was at any rate a reconstructed *Nulli Secundus I* which made the voyage to the Crystal Palace. As to the ship perishing in the gale, the fact is that she ceased to exist as the result of the gale. It matters very little to a patient whether he dies of appendicitis or whether he dies through being ripped open by the doctor who is operating for it. Appendicitis is the cause of his death either way.

Colonel Marsh further says that though Naval Airship No. 1 (the "Mayfly") admittedly had little disposable lift, it is rather an overstatement to say that she "never showed any particular inclination to get off the water on which she floated." He says that in fact no attempt was ever made to take her up. When tested in the shed on Sept. 22, 1911, she lifted with a disposable load of petrol, water and ballast bags representing the crew, of just over two tons on board. That disposable load being the minimum load which she would have to carry, one would have to know how much useful load beyond that she could have carried, before reckoning her as a practicable airship.

If she was only just able to lift with her necessary load on board then one would be perfectly fair in saying that she showed no particular inclination to lift. An aeroplane which could just get off the ground and no more might fairly be described as one which had no particular inclination to climb.

A third point in Colonel Marsh's letter is that the Mayfly did not break through being blown against the doorpost of her shed, but through fouling a buoy in the dock while she was being hauled round into a 9 m.p.h. breeze. Not noticing that she was foul of the buoy the men on the after handling guys continued to haul in with the result that she broke sideways amidships.

This is quite an interesting point in that it shows that instead of being destroyed by the weather, assisted perhaps by unskilled direction on the part of the officer in charge, she was merely broken by the heavy-handed habits of the Navy, like so many other aircraft in the succeeding fifteen years.

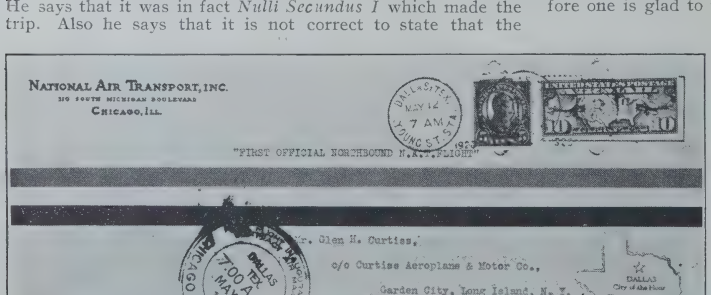
A fourth point made by Colonel Marsh is that Mr. Willows was not the first to cross the Bristol Channel in any type of aircraft, as stated in the article, because, on Sept. 24, 1810 (not 1910), Mr. James Sadler crossed the Bristol Channel in a balloon. One imagined that the text made it fairly clear that one was writing of power-driven aircraft, though presumably one must admit that a balloon is an aircraft of a sort.

If one were writing about steamships and one said that a certain navigator was the first to cross from Calais to Dover one could scarcely be supposed to be casting a slur on the first pre-historic man who paddled across on a log or was blown across on a raft.

In the course of this correspondence Colonel Marsh says that he is not responsible for any of the Airship Section of *The History of Aeronautics*, which was published by Messrs. Collins, as the joint work of Colonel Marsh and Mr. Vivian. Colonel Marsh says that he is only responsible for the section on "Progress in Aeroplane Design" on pages 277 to 313, and that he never saw a word of any of the rest of the book either in type or proof until the book was published, though in the Foreword Mr. Vivian refers to his assistance and advice "in connection with the section on aerostation."

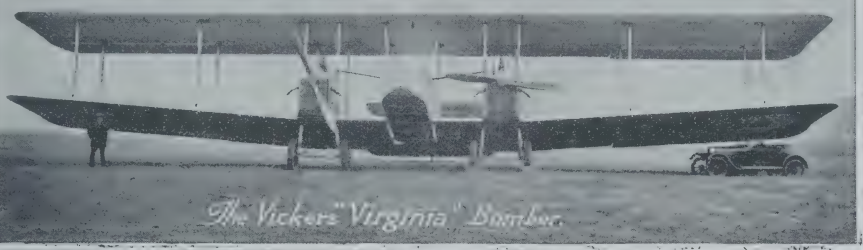
Knowing that Colonel Marsh was an airship officer during the War and was not connected with the flying of aeroplanes one naturally assumed that he was primarily responsible for that portion of the book which deals with airships. Therefore one is glad to make this correction with his permission.

C. G. G.



AN HISTORICAL DOCUMENT.—The envelope of a letter sent by the first North-bound Air Mail, run by National Air Transport Inc., from Dallas, Texas, to New York. It left Dallas at 7 a.m. on May 12 and was delivered in New York at 10.30 a.m. on May 13. In the time it covered 1,000 miles from Dallas to Chicago by day and 1,000 miles to New York by night. The envelope has been kindly sent by Mr. Glenn Curtiss, the great pioneer of American aviation, to "The Aeroplane" as a souvenir.

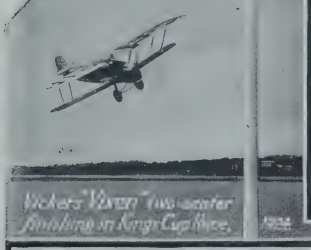
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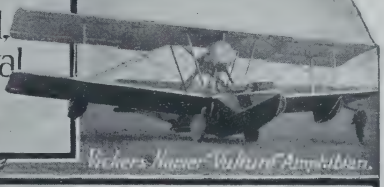
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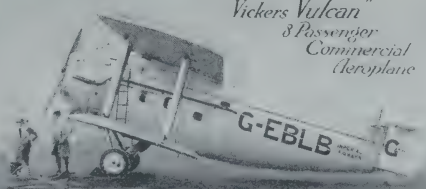
Vickers "Vixen" Two-seater fighting on Kings Cup Race.



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THE KING'S CUP RACE.

About a dozen entries are expected for the King's Cup Race which will radiate from Hendon on July 9 and 10. The course will be roughly the shape of a deformed starfish which has fallen in with a London child on holiday at the sea. It will consist of a series of out-and-home flights from Hendon to Martlesham, Duxford, Coventry, Cheltenham and Salisbury, instead of to populous centres, such as Birmingham, Southend, Bournemouth, Brighton and Bristol.

This is of course quite in accord with the secrecy of the event. The main desire of the Royal Aero Club has always seemed to be to make the event as secret as possible by sending the machines to the least populated areas by routes over which they will escape all observation. Last year, it will be remembered, they arranged a dense fog.

Very little information is as yet forthcoming as to the entries. It is rumoured that Mr. F. L. Barnard, last year's winner, is to fly a new racing Bristol biplane with a Jupiter VI engine. Mr. Courtney is to fly the A.D.C.-Nimbus-Martinsyde, and Mr. Schofield the Vickers Vixen with a 650 h.p. Rolls-Royce Condor engine.

It is understood that there will be other A.D.C. entries, and that the Parnall and Armstrong-Whitworth firms will all perform, and there is sure to be the usual batch of De Havillands, which will doubtless include the "Jaguar 9."

It was hoped that the Avro Avenger (Napier) would enter but one hears now that this is unlikely.—G. D.

The entry list will be closed on July 2 at 12.00 hours.

THE MODERN THEORY OF AEROFOILS.

On Tuesday, June 8, Capt. W. H. Sayers read a paper on "The Modern Theory of Aerofoils and its Application to Aircraft Design" to the Institution of Aeronautical Engineers.

In this paper it was pointed out that although the Vortex theory of aerofoils was now generally accepted, and used both for research purposes and for practical use, the published literature on the subject did not cover routine methods of applying the results to the needs of the aeroplane designer.

The theory showed that the characteristics of a given aerofoil as shown by the usual method of presenting the result of model tests could be separated into two distinct sections; and that in part the results were characteristic of the section proper, and in the other part depended on the span and the lift, or on the aspect ratio and lift of the particular model. Thus the same section, tested at two different aspect ratios, showed apparently different characteristics.

The theory gave a perfectly satisfactory, simple and now well-known method by which results obtained at one aspect ratio would be corrected for any other aspect ratio. By using these corrections the designer could foretell the effect of changes in span, but to do this he must compute a complete set of wing characteristics for every different section and for every different aspect ratio in which he might desire to use that wing.

An alternative and preferable method was to separate from the model tests in their original form those characteristics which were peculiar to the section and did not depend on the aspect ratio. To do this one computed the induced drag and the change of incidence proper to the model aspect ratio. As models were usually tested at a standard aspect ratio (6 in this country), these computations could be made once and for all and the application of the corrections to each model result as it became available was a matter of simple subtraction. In this way one obtained the profile drag co-efficient, and the relation between real incidence and lift for each section.

For a given case the total area required with any known section could be determined from the maximum lift of the section and the required landing. The "profile" drag characteristic of the section then permitted computation of that part of the wing drag which was directly due to the use of the particular section under the given conditions.

The "induced" drag which forms the rest of the total wing drag does not in any way depend on the section used, but only upon the span, the total load, and the speed of flight, and upon whether the wings are arranged as a monoplane, a biplane, etc., and upon such details as the ratio of gap to span.

Thus, given the total weight of a projected machine, and its required landing speed, the total area required, and the profile drag for a number of alternative sections can be computed without considering how those particular sections are to be arranged.

Further without reference to the particular section to be used, the induced drag for monoplanes or biplanes of various spans (and gap-span ratios) can be calculated. The total drag for any combination of section and wing arrangement is then the sum of the profile drag for the section and the induced drag for the arrangement.

The paper is accompanied by appendices in which the expressions necessary for performing the various computations are given in an orderly form, and a series of worked-out examples illustrate the method suggested.

MODERN ALCHEMISTRY.

Another Mediæval event has occurred at a Dayton, this time not in Tennessee but actually in Ohio, at the "Air City," and, at that, in the U.S. Army Air Service Engineering Division. It is reported in the Paris edition of *The Chicago Tribune* for June 9.

Mr. C. F. Adams, attached to the chemical laboratory at McCook Field, has for the last four years conducted experiments to find a source for helium gas other than the natural supply in Texas and Oklahoma. According to Dr. William Wohlleben, Professor in Chemistry at the University of Dayton, who has watched the helium experiments closely, Mr. Adams has disintegrated hydrogen into helium and other elements. The tests of the new gas are not even now completed. Its "inflammability and its density" remains to be tested. One would have thought that a match would have been available among the technical impedimenta, or implements, at McCook Field.

Along with this it is reported that Mr. Adams has successfully transformed mercury into gold, post-dating the experiments of other eminent and learned alchemists. At any rate he has "procured a yellow residue from mercury which looks like gold and which answers the acid tests of gold."

If the first-mentioned project be prompted by the predicted shortage of helium, one might wonder whether the latter be not provoked by the now famous question of Mr. Frank R. Reid, of Illinois, repeated innumerable times during the Lampert hearings, "What has McCook Field accomplished for $20,000,000?"

The U.S. Air Services will deserve to be congratulated if they can succeed in making their own gold, and so get away from having to rely upon appropriations voted by impertinent legislators. That might be well worth four million pounds. But—horrid thought—have not the United States too much cold gold, accumulated from the World's war-debts in their possession already

A BOOK WORTH KEEPING.

The Bristol Aeroplane Company Ltd. have just issued in booklet form a reprint of three papers on radial air-cooled engines read by Mr. A. H. R. Fedden, M.B.E., F.R.Ae.S., M.I.A.E., who is at once the designer and the constructor of the famous Bristol Jupiter and Lucifer engines.

The first of these papers was read before the International Air Congress at Brussels in 1925. This deals with the general problems of air-cooled radial engines and gives an excellent general outline of the conditions to which the designer is tied.

The second is a lecture given by Mr. Fedden to the personnel of the Aeroplane Experimental Establishment at Martlesham Heath in December, 1925, on the Jupiter Mark IV. This gives all sorts of interesting details of the internal economy of that remarkable engine and is illustrated by excellent photographs of the parts.

The third paper is that read before the Royal Aeronautical Society on Nov. 26, 1925, and deals with installation problems in air-cooled engines. This is particularly of interest to aeroplane designers, who will undoubtedly learn much if they take the trouble to study it carefully.

The booklet is not for sale in the ordinary way, but one learns from the Bristol Company that a certain limited number will be supplied gratis to responsible persons, such as R.A.F. Officers, senior technical N.C.O.'s of the R.A.F., and members of the design staffs of aircraft firms. In view of the fact that the number disposable is limited one strongly advises those who are interested to apply forthwith.

The book is certainly one which ought to be studied by everybody who takes an intelligent interest in aircraft design and construction and should be kept permanently for reference. In fact one suggests that those who are so fortunate as to obtain a copy should forthwith have it bound in a sturdy cover.—C. G. G.

THE KOOLHOVEN SEAPLANE.

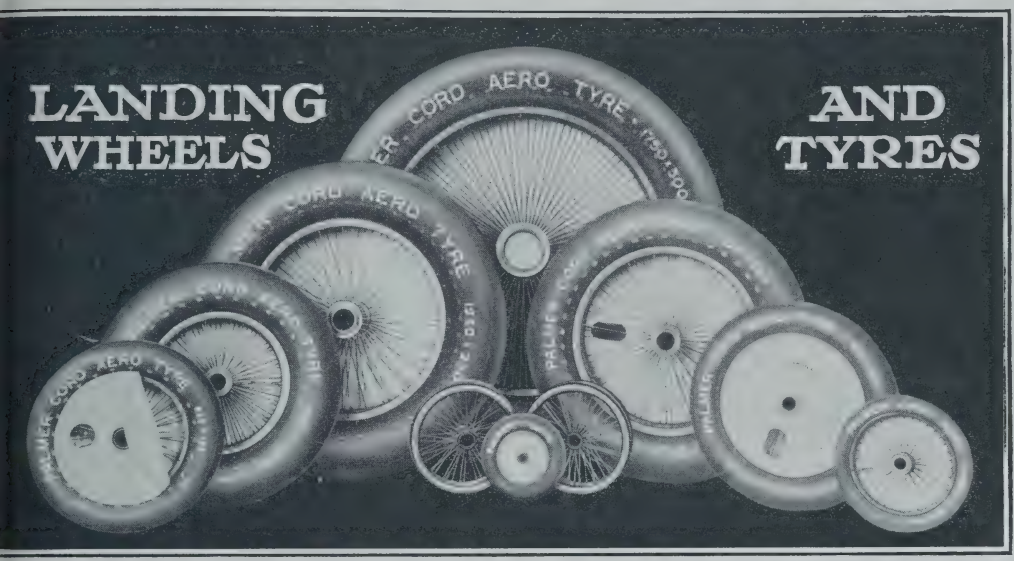
The F.K.34 twin-float monoplane seaplane, built by the Nationale Vliegtuig Industrie to the designs of Mr. Frederick Koolhoven with a Bristol Jupiter IV engine, seems on figures to be unusually successful, even for Mr. Koolhoven's designs.

She gets off the water in 16 seconds with a useful load of 1,850 lbs., and has a speed low down of 125 m.p.h. She does this despite very high wing loading, the figure being 17.5 lbs. per square foot, which seems to prove the efficacy of thick wings when properly designed.

The floats behave satisfactorily and show no sign of porpoising. The floats themselves are very strong but are attached to the undercarriage in a way which gives a certain amount of flexibility.

Up to a week or two ago the machine had flown for more than 27 hours and had made some forty flights. When first launched some doubt was felt about the success of the machine as the waves from the floats damaged the Lamblin radiator. This radiator was then changed for one of the André type and everything is now quite satisfactory.

PALMER



STANDARD SIZES

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
75×55	168	111.12	25.4	Central
00×60	16	111.12	25.4	Central
50×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
75×60	21	160.	28.	Central
,,	180	150.	38.09	104/46
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
50×65	78	178.	44.45	132 46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132 46
00×75	21	160.	28.	Central
,,	180	150.	38.09	104 46
,,	186	120.	34 92	Central
,,	190	150.	38.09	Central
00×75	78	178.	44.45	132 46
,,	79	178	44.45	Central
,,	100	178.	38 09	132 46
,,	101	178.	31.75	132/46
0×100	77	178.	44.45	132 46
,,	92	185.	55	125 50
,,	95	185.	55	Central
,,	99	178.	38.89	132 46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38·09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135.50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135 50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125 60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
,,	194	185.	55.	125/60
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central
1750×350	193	400.	125.	Central

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(365)

THE 500 h.p. FARMAN ENGINE.

As is already well known, the present Duration Record is held by MM. Drouhin and Landry, who on Aug. 7-9, 1925, remained in the air for 45 hours 12 mins. on a Farman biplane fitted with one 500 h.p. Farman type 12W.E. engine.

This particular engine has a particularly brilliant history. It was first installed in the single-engined Goliath biplane on July 16, 1925. After various tests of consumption of fuel and oil, involving 9 hours 39 mins., the machine put up the world's record referred to above.

On Sept. 13, 1925, the same engine was installed in a Breguet XIX biplane, type "Grand Raid," and a number of tests were carried out by M. Boussoutrot and Lieut. Challe. On Nov. 5, this machine, in company with three others (two Breguets and one Potez 25), left Villacoublay, piloted by Lieut. Challe, on a flight to the Near East and back. On Dec. 13, the Breguet-Farman, in company with two of the three other machines, reached Teheran, after making a number of demonstration flights in Italy, Serbia and Roumania.

The three machines remained in Persia for some time, and during this period, Lieut. Challe on the Breguet-Farman flew over Mount Denavend (18,600 feet) with the Persian Minister of War as passenger. On Dec. 22, the three machines left Teheran for the return journey to Paris, via Aleppo, Athens and Rome. Lieut. Challe and one other machine arrived at Villacoublay on Jan. 21, 1926, after having flown through most unfavourable weather.

During the course of this flight, which lasted two-and-a-half months, the Farman-engined Breguet XIX covered 12,500 kms. in 104 flying hours. During this time, the engine was not touched, even the same plugs and valve-springs lasting for the whole voyage.

During the course of a demonstration flight at Belgrade, the airscrew was slightly damaged by being hit by mud thrown up by the wheels on taking off. There being no spare airscrew available, the damaged screw was used until Constantinople was reached on the return journey, when a spare airscrew which had been despatched from France was picked up.

On the outward journey, involving 37 hours 49 secs. flying, 3,195 litres of petrol and 108 litres of oil were used. On the return journey, involving 48 hours 35 secs. flying, 4,000 litres of petrol and 136 litres of oil were consumed.

This particular engine, No. 443, was not specially prepared for record-breaking, but was a perfectly standard series engine. From the time of its installation in the Farman Goliath on July 16, 1925, to the time of its return from Teheran, the engine had no overhaul, and its log-book shows a total of 159 hours 20 mins. flying time.

A DORNIER GIANT AEROPLANE.

Rumour—again very circumstantial—asserts that the Japanese Government is directly interested in the 100-passenger aeroplane which the Junkers firm are alleged to be about to build, and that in addition the Dornier interests have prepared a design for a machine of similar size and have received a definite order for such a machine from Japan.

The Dornier machine—which is to be built by the Societa di Construzzioni Meccaniche de Pisa—is to be a seaplane fitted with twelve Jupiter engines built by the Italian concessionaire Nicola Romeo.

THE FLYING CLUBS.

The London Aeroplane Club.

The total flying for the week was 30 hrs. The weather prevented any flying on Thursday and Friday. On Sunday, the 13th inst., the Club put up its record flying day, the total time being 14 hrs. 5 mins., of which 6 hrs. 5 mins. was solo flying by the members.

G. Wallcousins and C. E. Murrell passed the flying tests for their Aviators' Certificates.

Flying instruction was given to the following members:—L. J. C. Mitchell, G. W. Quirk, G. Eady, G. Black, F. S. Adams, T. H. O. Richardson, O. J. Tapper, E. A. Cook, J. H. Saffrey, B. B. Tucker, Capt. Godfrey, J. C. Parkinson, A. R. H. Stewart, H. F. Wright, H. Soloman, W. E. P. Johnson, J. H. Links, E. D. Kittel, Miss O'Brien, Col. Farfan, A. R. W. Stewart, A. L. Angus, J. W. Garne, G. W. Hall, J. A. Simson, J. Barros, W. Hay.

The following members made solo flights:—Major K. M. Beaumont, Sir John Rhodes, A. R. Ogston, L. J. C. Mitchell, C. E. Murrell, G. Wallcousins, G. W. Quirk, A. G. D. Alderson, W. Hay, A. Lees, S. O. Bradshaw.

The Lancashire Aero Club.

Report for week ending June 11.

The weather has been good. Mr. Stack and Mr. Scholes were away for training at Brough from Monday until Saturday, Mr. Cantrill doing all instruction in their absence.

The following had dual with Mr. Stack:—F. Gattrell 1 hr. 20 mins., A. Benson 1 hr. 20 mins., B. Leigh 35 mins., A. Abdulla 30 mins., A. Anderson 25 mins., J. Leeming 25 mins., Mrs. Brown 25 mins., D. Brown 20 mins., A. Goodyear 20 mins., H. Hardy 15 mins.

Mr. Cantrill gave instruction to:—A. Abdulla 1 hr. 15 mins., A. Benson 50 mins., H. Hardy 35 mins., C. Agar 35 mins., J. Leeming 30 mins., C. Marsland 25 mins., A. Goodyear 35 mins., W. Lilley 20 mins., B. Leigh 20 mins., D. Brown 20 mins., E. Barnes 20 mins., F. Collinson 10 mins., —. Slater 5 mins.

Mr. Scholes gave instruction to:—A. Benson 50 mins., A. Abdulla 45 mins., D. Crosswaite 40 mins., H. Hardy 35 mins., D. F. Davison 35 mins., B. Smith 35 mins., P. Michelson 25 mins., E. Fray 20 mins.

The following made solo flights:—Messrs. Slater 1 hr. 20 mins., M. Lacayo 1 hr. 15 mins., R. Wilkinson 30 mins., A. Goodfellow 15 mins.

Tests occupied 45 mins. Joy-rides 45 mins. Total solo 3 hrs. 20 mins. Total dual 16 hrs. 50 mins.

Total time flown 21 hrs. 40 mins.

A portion of the Club House was opened by Colonel Groves on June 6 and teas may now be obtained. When the remainder of the building is completed, meals will be available at all times.

During the Strike the Lancashire Club flew *Daily Mails* to Hull and Newcastle.

The Newcastle-upon-Tyne Aero Club.

Report for week ending June 6. (*Delayed in post.*)

Total flying time 40 hrs. 55 mins., all on G-EBLY (*Bernicia*), as the engine of I.X is at the makers' for overhaul.

Dual 13 hrs. 25 mins., Solos 16 hrs. 30 mins., Tests 10 mins., Passengers 1 hr. 10 mins., Photographic flight to Epsom 9 hrs. 40 mins.

The following members flew under instruction:—Mrs. Marcks, Miss Leathart, Col. Sir Joseph Reed, Messrs. Phillips, Bruce, Thirlwell, George, Twine, J. Bell, Barnes, W. Todd, Palmer, and Dr. Dixon.

Pilot members:—Mr. R. N. Thompson flew with Mrs. Thompson and Mr. Davidson as passengers. Mr. N. S. Todd took Mr. Campbell for one flight.

Solos:—Mr. Macmillan, Mr. Phillips, Mr. C. Thompson, and Dr. Dixon.

Passengers with Major Packman:—Miss Dixon and Mr. Baker.

Mr. Phillips was "launched" on the 4th and Dr. Dixon on the 6th, both putting up excellent performances after just over six hours' dual instruction each.

The total time flown from the beginning (September last) to date is 717 hrs.; 62 members have received instruction, 8 have licences, and 5 are now flying solo.

Major Packman took a representative of *The Newcastle Chronicle Ltd.* to Epsom on Derby Day, but met with appalling weather conditions, having continuous rain throughout the journey except for about 15 miles out and on return to the aerodrome, though the weather there was perfect all the time.

The Club was honoured with a visit from Air Commodore J. Weir, on his D.H. 51a, on Monday, May 31, when he called for lunch. Unfortunately Major Packman takes his holiday on Monday, and it is usually a quiet day, and there was only Mr. Brown, Engineer, the Secretary and, fortunately, Mr. Wingfield, the Steward, to meet him. After filling up (the Pilot) Air Commodore Weir proceeded on his journey to London via Brough, staying only about one hour at the aerodrome, exactly as he would have done after calling at a motor club had he been travelling by car.

Report for week ending June 13.

Total flying time 13 hrs. 50 mins. Dual instruction 6 hrs. 25 mins. Solo 6 hrs. 30 mins. Joy-rides 45 mins. Tests 10 mins.

Owing to the continuous flying which has taken place during the past few weeks, two of the Club's Cirrus engines have become due for complete overhaul at about the same time. Added to this an almost continuous downpour of rain during the week made flying impossible on most days of the week.

The following members flew under instruction:—Miss C. R. Leathart, Messrs. Bruce, Detchon, J. Bell, Stewart, Campbell, Shaw and George, Dr. Dixon and Dr. Howard. Secondary dual:—Mr. C. Thompson and Dr. Dixon. Solo:—Mr MacMillan, Dr. Dixon, Mr. C. Thompson.

"A" Pilots:—Mr. Heppell with Mr J. Bell, Mr. R. N. Thompson with Mr. A. Bell.

Passengers with Major Packman:—Miss Armitage, Miss Ormond, Mr. Stobbs.

The Gull is undergoing a thorough overhaul at present.

The Private Owners' Club.

The British Private Aircraft Owners' Club has organised a "Meet" for next Sunday, weather permitting.

They intend leaving Stag Lane at 11 a.m. to fly to Cowes for lunch. If the weather still permits they will return *via* Lympne.

Club Moths.

Certain members of the London Aeroplane Club have pointed out in reference to some remarks in THE AEROPLANE recently, that the D.H. Moths of the London Aeroplane Club are only used for taking up passengers by pilots who have actually qualified for their licences, or by pilots holding A licences who have done over 5 hours' solo flying.

There is a rule of the London Aeroplane Club that no member other than a B licence pilot, may take up a passenger until he has done 50 hours' flying solo. And after that special approved members who hold A licences may be granted permission by the committee to take up other members on certain terms.

It has further been pointed out that it is a little difficult to prevent private owners of aeroplanes from taking up passengers in their own machines although they may not be licensed by the Air Ministry to carry passengers. In such case the passengers are taking their own risk.

One can assure the Committee and members of the London Aeroplane Club that in that particular paragraph one was not thinking particularly of the London Club nor of any particular clubs. One merely had in mind the general principle that somehow incompetent pilots ought to be prevented from taking up passengers. And it occurred to one that if a pilot who has not got a licence but has done some solo flying, or a pilot who only holds an A licence, can hire a machine from a club for £1 10s. an hour to fly by himself there is nothing to prevent him from landing away from the aerodrome and taking up friends as passengers. And unless there is a rule to the contrary there is nothing to prevent him from taking up passengers on the club's own aerodrome itself, provided that he does not accept a fee or reward for doing so.


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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 19; Tuesday, 20; Wednesday, 19; Thursday, 18; Friday, 21; Saturday, 20; Sunday, 8.

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AIR UNION: ...
Paris—London: Machines 30, passengers 141, freight 11 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 59, freight 3 tons.

SABENA:
Brussels—London: Machines 12, passengers 28.

DEUTSCHE LUFTHANSA AG
Berlin—London: Machines 2, passengers 4

SPECIAL:
Machines 4, passengers 6.

Total number of trips by British Machines, 69, carrying 455 passengers. Foreign Machines, 56, carrying 232 passengers.

Comparative Figues:

Week ending June 13:
Machines, 125; Passengers, 717; Crews, 155; Total personnel, 872.

Corresponding week, 1925:
Machines, 147; Passengers, 703; Crews, 181; Total personnel, 884.

Corresponding week, 1924:
Machines, 116; Passengers, 391; Crews, 287; Total personnel, 678.

Corresponding week, 1923:
Machines, 121; Passengers, 378; Crews, 203; Total personnel, 581.

Corresponding week, 1922:
Machines, 106; Passengers, 168; Crews, 135; Total personnel, 303.

Corresponding week, 1921:
Machines, 91; Passengers, 300; Crews, 107; Total personnel, 407.

Corresponding week, 1920:
Machines, 94; Passengers, 194; Crews, 117; Total personnel, 311.

Croydon Notes.

Lt.-Col. Minchin has delayed his departure for Cairo as the Air Ministry Meteorological section informed him on Monday of last week that for the ensuing fortnight the weather over Europe would be unsettled. How right the department were we have seen, and the fact (disclosed by Tom Webster) that Mr. Carr and Mr. Collins spent the week-end "showing olive branches to doves," was unable to alter conditions.

The credit for this piece of forecasting goes, one believes, to Mr. Entwistle, who will always be remembered as the "Gust-Guesser" of Itford Hill. Mr. Entwistle's department is one of the most efficient in the Ministry. Their short six- or 12-hour forecasts are always accurate and they are pretty shrewd over long-distance ventures as the present instance shows.

Many important flights that have been made owe their success to the forecasting of Mr. Entwistle and his confederates. Among others, Mr. Cobham owes much of his success to the "Met." branch.

Mr. Dudley Travers on his D.H.9 taxi passed through the aerodrome during the week *en route* for France with two passengers. He returned on Saturday night still with his two passengers.

Mr. Hope on a D.H. Moth and one passenger left for Antwerp on Friday. One has no idea why he went there, but presumably he had some good enough reason.

At A.D.C. Aircraft Ltd., Mr. Perry has been doing tests on many various machines. He has again been leaping high into the sky on the "Nimble-Martinsyde."

On Saturday he flew to Nottingham, where the dispute between England and Australia over the Coal Residue (or Ashes, for the benefit of Editor and those who do not understand Cricket) was supposed to be in progress, though the rain seemed to interfere with ash-getting.—G. D.

PRINCE CHICHIBU AT STAG LANE.

On June 12, H.I.H. Prince Chichibu, the Japanese Heir Apparent, made his first flight in an aeroplane at the Stag Lane aerodrome of the de Havilland Aircraft Co. Ltd.

He was piloted by Col. the Master of Sempill and flew, first, in a D.H. Moth (27-60 h.p. A.D.C. Cirrus engine), and also in a D.H.9, the flights lasting for some considerable time.

The Prince expressed his delight with the flights and before leaving he made an inspection of the De Havilland Works.

EMPIRE AIR ROUTES.

Speaking at a luncheon of the British Empire Club on June 11, Sir Samuel Hoare, Secretary of State for Air, said that more than 1,500 miles of regular air routes were being operated at home and there were services in Australia covering distances of 3,000 miles. The three main lines of progress under consideration were an airship route to India in four days, one to Cape Town in six days, and another to Australia in ten, and New Zealand in twelve days. A fourth line might possibly be formed to cross the Atlantic to Canada in two-and-a-half days.

Speaking of the Cairo-Karachi aeroplane service, which was to start next January, Sir Samuel Hoare said that officers on the N.W. Frontier and Indian civilians were already booking passages by a service which would save them ten days or a fortnight of their leave at home.

With regard to the development of airships, he said that a protracted period of research had shown that there was no technical reason why airships of 5,000,000 cubic feet capacity, carrying possibly 100 passengers, 20 tons of freight, and a crew of 50, should not carry out the services in the time he had already referred to.

Sir Samuel Hoare went on to say that he should like to ask the various Governments of the Dominions, in their own interests no less than that of Empire communications, to build mooring masts, which would enable them to make full use of the two airships as soon as they were built.

The Melbourne correspondent of *The Daily Telegraph*, in a message dated June 14, states:—

Referring to Sir Samuel Hoare's speech on the airship service to Australia, Mr. Bruce, the Commonwealth Premier, said: "If the project is proceeded with there will be no difficulty in erecting suitable mooring masts in Australia. No official communication in the matter has reached the Government, who will take all the necessary steps when requested to act."

A SUPERMARINE TRIUMPH.

News has just been received by the Supermarine Aviation Works Ltd. from their Chief Designer Mr. Mitchell, who is in Copenhagen, that a contract has been signed with the Danish Government for a large three-engined flying boat.

This machine will be built at the Supermarine Company's Southampton Works, and will be fitted with three "Jaguar" air-cooled engines.

It is worthy of note that this contract has been secured in the face of strong Continental competition, and it indicates foreign appreciation of the supremacy of the design and construction of British aircraft and engines.

A PASSENGER-CARRYING RECORD.

The Berkshire Aviation Tours are putting up a splendid record for passenger carrying. At Leeds last Sunday, Mr. Parkinson took up 284 passengers, Mr. Stirling 272, Mr. Leleu 72, and Mrs. Eliott-Lynn 24. Mr. Leleu would have carried more if a cam roller in his engine had not broken.

This is Mr. Parkinson's record for passengers in one day, and is probably a World's record. The largest numbers of passengers previously carried by Mr. Parkinson in one day have been 200 in 1923 and 236 in 1925.

PARIS—TOKYO.

On June 11 Capt. Pelletier Doisy and M. Carol left Villacoublay at 09.10 hours on a Breguet XIX biplane (450 h.p. Lorraine-Dietrich engine) in an attempt to fly to Tokyo across Russia, and arrived at Warsaw at 16.45 hours.

On June 12 they flew from Warsaw to Moscow, arriving at the latter place at 15.00 hours. When crossing the Polish-Russian frontier they were fired at by a Bolshevik frontier guard, but no damage was sustained by the machine or crew.

On June 13 they continued their flight from Moscow to Kazan.

THE GYRATORY SYSTEM.

The first British-built Auto-giro, built by A. V. Roe and Co. Ltd. for the Cierva Auto-giro Company Ltd. for the Air Ministry, will (usual agents permitting and willing), be tested at Hamble this week by Mr. Frank Courtney.

It is of Avro-Auto-giro characteristics and differs from the original, apart from having a 12-ft. wide undercarriage, in detail only. It is expected that, barring accidents, it will appear at the R.A.F. Display.

One of the things which one would like to see at the Dis-

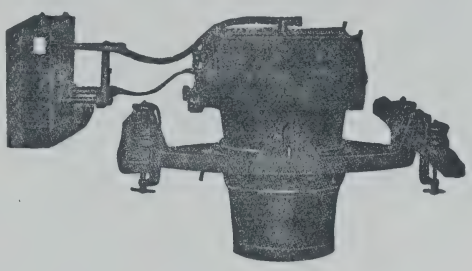
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play will be a formation of Air Ministry technical experts mounted on slide-rules, proving once again that the Autogiro cannot leave the ground.

CURTISS AIRCRAFT IN SOUTH AMERICA.

On May 16 Lieut. J. Doolittle, U.S.A.S., accompanied by Mr. Boyd Sherman, of the Curtiss Aeroplane and Motor Co., arrived in Valparaiso complete with two of the latest Curtiss Hawk (P.-1) single-seater fighters each fitted with the 430 h.p. Curtiss D.12 engine.

The visit had been arranged by Mr. G. W. Webster, who represents Curtiss interests in South America. Lieut. Doolittle, who has been granted leave of absence by the U.S. Army Air Service, will demonstrate the Curtiss Hawk before the Chilean, Argentine and Brazilian authorities and in visiting the two latter Republics he will attempt to establish a new speed record for the Transandine Flight from Santiago (Chile) to Buenos Aires, proceeding thence to Monte Video and Rio de Janeiro.

PHOTOGRAPHING A VOLCANO.

In response to a request by Dr. T. A. Jagger, volcanologist in charge of the Kileau Observatory, a Flight of U.S. Army aeroplanes were sent to Hawaii on Apr. 17 to locate the source and flow of a volcanic eruption of Mauna Loa.

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The Flight took photographs from the air of the flow from its source to its terminus under difficult conditions, owing to the intense heat from the lava. All the pilots reported that directly over the lava stream the air was comparatively smooth, but on either side, for a short distance, the air was so bumpy that it was difficult to keep the machine under control.

The mission was entirely successful.

FRAUDULENT MISREPRESENTATION.

The Palmer Tyre Ltd. (100-106, Cannon Street, E.C.4), state that certain tyres are being offered for sale which are fraudulently represented to be Palmer Cord tyres suitable for motor-cars when they are, in fact, Palmer Cord Aero tyres of old manufacture, or surplus war stock, which have been altered so as to appear to be motor-car or motor-cycle tyres.

In many cases the figures 700 × 100 which indicate an aeroplane tyre size, have been removed and the figures 710 × 90 or 700 × 80, the well-known car sizes (or in some cases 710 × 90 × 100), have been stuck to the side of the cover in their place. In addition the words "Aero Tyre" have been buffed out, and diagonal grooves cut in the tread surface to give a diamond tread effect.

The Palmer Tyre Ltd. desire it to be understood that such tyres are entirely unsuitable for use on cars, and the sale or offering for sale thereof renders the persons concerned liable to prosecution under the Merchandise Marks Acts.

The Palmer Tyre Ltd. ask that any person who has purchased any of these tyres will be so good as to communicate with them and give them any information he may have in connection therewith.

A DISCLAIMER.

Mr. Geoffrey Dorman wishes it to be generally known that some weeks ago he ceased to be connected in any way with *The Evening News*. As Editor of THE AEROPLANE one wishes to emphasise the fact, lest aeronautical news written without Mr. Dorman's inside knowledge of aircraft affairs should be thought to emanate from this office.—C. G. G.

PERSONAL NOTICES.

DEATHS.

STEVENSON.—On June 10, at Holmbury St. Mary, Lord Stevenson, G.C.M.G.

Sir James Stevenson was a member of the Air Council in 1919-20-21. His peerage was conferred in May, 1924, in recognition of his work for the British Empire Exhibition at Wembley.

WARWICK.—On June 3, at the Citadel Military Hospital, Cairo, as the result of injuries sustained in a flying accident on Apr. 9, L.-AC. Howard Keith Warwick, R.A.F.

MARRIAGE.

SHANKS—MACKINLAY.—On June 12, at Christ's Church, Coatham, Yorks, Douglas (late Lieut., R.F.C. and R.A.F.), son of Mr. and Mrs. James Shanks, 26, Wolseley Road, Crouch End, N, to Margaret Lucy (Peggy), daughter of Dr. and Mrs. W. H. Mackinlay, Redcar, Yorks.

BIRTHS.

BERTRAM.—On June 6, at Cleghorn, Lanark, Scotland, to Dorothy, wife of Flt. Lt. Ian Bertram, R.A.F.—a son.

BURD.—On June 11, at 10, Windsor Terrace, Lyme Regis, to Norah (*née* Langran), wife of J. M. Burd, R.A.F.—a daughter.

ELLWOOD.—On June 11, at The Old House, Walmer, Kent, to Lesley, wife of Flt. Lt Aubrey B. Ellwood, D.S.C., R.A.F.—a son.

GARDINER.—On May 30, at St. Erme Rectory, near Truro, to Mr. G. S. Gardiner, R.A.F., and Mrs. Gardiner—a son.

PORTAL.—On June 13, at Woldingham, to Joan, wife of Wing Cdr. C. F. A. Portal, R.A.F.—a daughter.

RIDD.—On June 4, at Fulbeck, Lincoln, to Emma Constance, wife of Frank Ridd (formerly No. 26 in the R.F.C., and First-Class Warrant Officer, R.F.C. and R.A.F.)—a daughter.

SCOTT-PAINE.—On June 6, at "The Cliff," Weston, Southampton, to Brenda, the wife of Hubert Scott-Paine—a daughter.

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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXX. No. 25. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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"SHE FINDS FAMILIAR NAMES, A BEATEN WAY
"EVER BEFORE HER, AND A WIND TO BLOW."
(Wordsworth.)

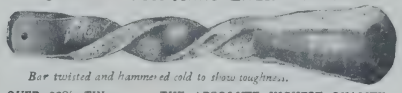
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"SEMPER SECURUS" (the motto of Imperial Airways).—The Supermarine Swan (2 Napier Lion engines, 900 h.p.) taking off Southampton Water. This is the first twin-engined commercial flying-boat to be used on a regular air line in this country. It will be used on the Imperial Airways Channel Islands Service.

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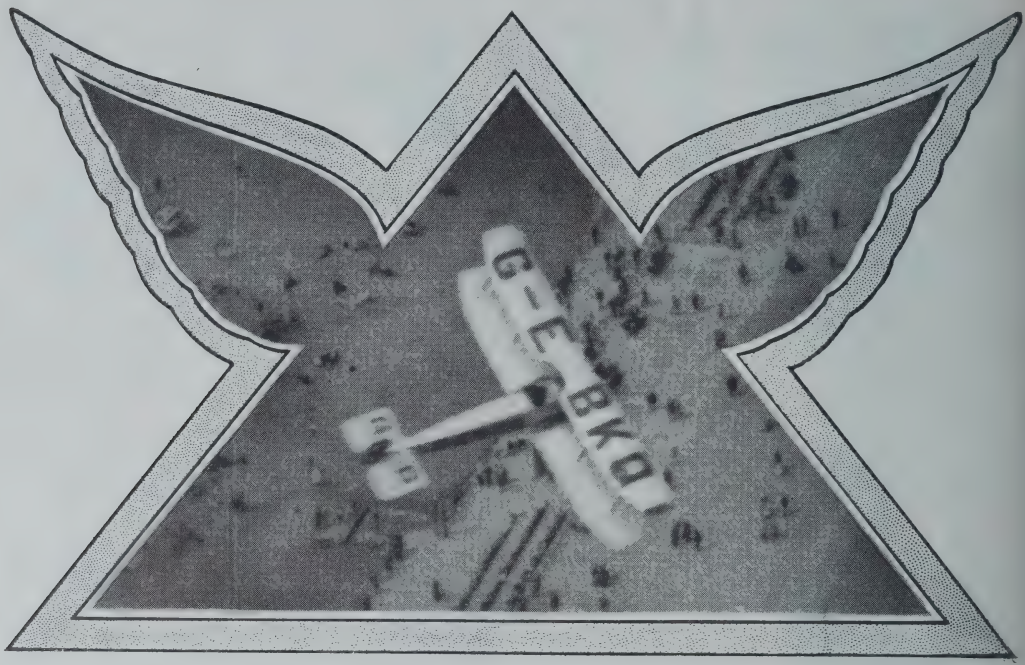
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JUNE 23, 1926.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXX. No. 25.

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts, and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics, Ltd., 14, Bream's Buildings, E.C.4.
Telephone: Holborn 426.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s.
Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, 8$.
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ON IMPERIAL DEFENCE.

One of the permanent obsessions of a certain class of mind, the mind of the man who always wants perfection and who will not recognise the fact that life is a series of compromises, when it is not "just one damn thing after another," is the idea of a Ministry of Defence. Men of this type visualise the permanent provision by the population of this country of a Statesman who combines the initiative of Beaconsfield with the soundness of a Baldwin and the military foresight of a Bismarck.

The idea is certainly alluring. But it would depend for its success on the assurance of a supply of supermen.

A benevolent despotism is the ideal form of government, but it depends on a succession of benevolent and competent despots, and a Ministry of Defence would in the same way depend on consecutive holders of the office being entirely competent. The trouble is that if we had one Beaconsfield-Baldwin-Bismarck Superman the next Minister of Defence might be a combination of Mr. Lloyd George, Mr. Tennant and General Seely.

Another disadvantage is that which was pointed out by a distinguished Air Force officer several years ago when there was an earlier agitation on the subject. That is that each Minister of Defence would be almost bound to have a prejudice in favour of one or other of the three Services. One might favour the Army and neglect the Navy and the Air Force, another might use all his power in favour of the Navy to the detriment of the Army and the Air Force, and yet another might build a huge Air Force and forget that the Navy still has its uses and that the Army at the finish is the only thing that keeps a war won.

Hereafter there appears a précis of the debate in the House of Lords last week on this subject of a Defence Ministry, in which each of the three Fighting Services would be represented by an Under-Secretary of State. As usual the Lords talked as much sense in an hour or two as the Commons do in a week.

Therein it will be found that Lord Thomson, who is really quite a sound soldier with a leaning in favour of Air Power in spite of his Socialistic political creed, was opposed to the idea of the Ministry of Defence and advocated that the Committee of Imperial Defence should have greater executive power.

The Earl of Balfour, in replying on behalf of the Government as Lord President of the Council, said that he was perfectly certain that the various departments of State would instinctively become hostile to the Committee of Imperial Defence if that body were given executive power and he disclosed the fact that the Government was in process of establishing a College of Imperial Defence.

The Committee of Imperial Defence.

To the average man, and presumably to most junior officers of the R.A.F., the Committee of Imperial Defence is a somewhat hazy kind of body in which they are not particularly interested. But it is in truth the most important factor in the welfare of this country.

The only permanent member of the Committee apparently is the Prime Minister for the time being, and the rest of the Committee are appointed by him with, presumably, the King's assent. The Committee includes the Chiefs of Staff of the three Fighting Services, not by any prescriptive right of the Services but because they are men whose special experience is likely to make them valuable members of the Committee. The rest of the Committee are chosen because of some special qualification or other.

As Lord Balfour said, the Committee has "every power to examine, to initiate and to revise," but it has "not the power to order and command." But the reason for the success of the Committee of Imperial Defence is that not even Their Lordships of the Admiralty dare run contrary to the advice of a body which has so much mental power within itself.

Moreover, before any suggestion from the Committee of Imperial Defence reaches the Admiralty or the War Office or the Air Ministry the particular Service concerned has already had its views properly put forward by the First Sea Lord or by the Chief of the Imperial General Staff or by the Chief of the Air Staff, whichever is concerned. So that there can be very little chance of that particular Service quarrelling with the suggestion.

Lord Balfour also stated that it was proposed "that there should be a special warrant by the Prime Minister, couched in the stately language of a bygone age, in which the duties of the three Chiefs of Staff should be enumerated," and that these three distinguished officers should meet together with a view to coming to a common opinion which they could lay before the Committee of Imperial Defence.

The Earl of Cavan, until recently Chief of the Imperial General Staff, told the House of Lords that since January, 1923, there had been twenty occasions on which various Governments had referred specific questions to "The Chiefs of Staff Sub-Committee" of the Committee of Imperial Defence. He said that on nineteen out of these twenty occasions the Chiefs of Staff had submitted a unanimous opinion and that on the twentieth occasion they did not quarrel among themselves but had not time to finish the question before he himself retired from office.

Thus it may be seen that with our usual English genius for compromise we have arrived at a state of affairs in which a committee which has no authority at all actually has more



THE SUPERMARINE SWAN. This view shows the bluff bows and the superstructure accommodating the pilot's cockpit. By placing the pilot high up above the hull proper the entire forward portion of the hull is given over to the cabin and the baggage compartments.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

authority than anybody else. And we are gradually arriving at the stage when by proper co-operation between the Services we shall achieve something very much better than anything which can be achieved by a Ministry of Defence.

Mutual Understanding.

But, in order that this co-operation may be complete it is necessary that there should be a fuller understanding between the Services and especially between the senior officers of the Services. Already certain officers of the Navy and Army, selected by the Admiralty and War Office, are attached to the Air Force Staff College at Andover for an Air Staff Course. And certain officers of the Navy and Air Force go to the Army Staff College at Camberley for a course. And certain officers of the Air Force and Army go to the Naval College at Greenwich for a course.

In this way everybody benefits. Not only do the officers of what one may call the alien Services profit by going to the Staff College of the other Service, but when they are there they introduce an entirely new point of view to the thoughts of the students of the Service to which that Staff College belongs.

One has heard from people who have been to Camberley that frequently staff exercises were carried out and staff problems were considered without taking into calculation the effect of air force on the operations concerned and that while these exercises or problems were in progress the time of the Air Force officers on the spot was chiefly taken up in saying, "Ah! But, what is going to happen when the enemy's aircraft do this, that, or the other thing?" And on many occasions the question has entirely altered the scheme of operations.

One can well imagine that the "Ah! But" kind of question would upset still more a scheme of naval operations, especially now that even quite senior officers with the Navy are beginning to realise that aeroplanes can not only fly and report the movements of ships but must even be considered as serious weapons of offence with bombs and torpedoes.

The Bigger Idea.

Unfortunately this small scheme of attaching two or three officers from one Service for a course at the Staff Colleges of the other Services cannot affect the bulk of the officers in any of the Services sufficiently to secure intelligent co-operation between any two, or all three, of the Services. Something bigger is required to assure our safety in the Great War of the future. It is to this end that the College of Imperial Defence is being founded.

In a very interesting letter to *The Times* on June 18, Major-General Sir George Aston, K.C.B., points out that in March last he had advocated in *The Times* combined courses or conferences lasting for three or four months, for more senior or responsible officers, these courses to be conducted on the lines of the Naval War Courses for flag officers and others which are held twice a year at Greenwich. He expresses his opinion that Staff Colleges, as they now exist, can best be employed in training officers to fill junior staff appointments in the three services. With which sentiment most experienced people agree.

The general inference to be drawn from what one can learn about the College of Imperial Defence is that it will be a college to which the senior officers of the three Services w go from time to time, when not actually in command of an thing in particular, and will there educate one another in th problems of their own particular Service in relation to th other Services.

The scheme is wholly excellent. Half the troubles, and very high proportion of the losses of men and money, in th War 1914-18 were due to the fact that the senior officers one Service did not in the least understand the limitatio of the other Services, nor did they understand the pos bilities of the other Services.

For example, the Navy never did realise that its own ai craft could be used for gun-spotting far more accurately tha any spotting that Naval personnel could possibly do. Durin Admiral Bacon's famous and amusing bombardment of th Belgian coast the Navy insisted on taking their spotting fro a naval person sitting on a church tower at Newport. Fro that point he could see whether the shells were short or ov the target. But he could have no idea whether the line w correct or not. And all the while the ships refused to tal any advice from aeroplanes which were circling directly ov the target and could give both line and length.

Educating The Navy.

Nearly all naval officers in these days do realise the valu of aircraft for gun-spotting and reconnaissance. But only a College of Imperial Defence where they can argue problem fully and at leisure with Air Force officers of their own stan ing and experience can the Navy ever learn to use aircra to their full advantage.

The necessity for such co-operative education will be st greater when the Admiralty has succeeded in filling up th Fleet Air Arm entirely with naval officers, as it is entitle to do under the present arrangement with the Air Ministr When this work has been acomplished to the satisfaction the Admiralty the Fleet Air Arm will consist entirely of fle reconnaissance people—bombers, torpedo-droppers and a fe fighters. And all their ideas will be wrapped up in wh they have to do to preserve their big ships from being sun by hostile fleet air arms, and what they can do to help in th sinking of the big ships of other fleets.

They will become narrowed in their outlook just as eve naval officer's outlook is narrowed by the conditions of his pr fession. And they will find themselves completely at a lo when faced with entirely new problems by an Air Force whi operates from land bases with types of aircraft and weapo and explosives which do not enter into the calculations a fleet at sea.

A College of Imperial Defence is just what is needed bring about real co-operation between senior officers of th Navy and the Air Force.

A Matter of Choice.

One can only hope that when this College comes into e istence and Air Force officers have to be appointed there they will be picked by the competent authorities at the A Ministry with especial care. There have been occasions o which appointments have been made apparently in a mo haphazard fashion, despite the fact that very much of th welfare of the Air Force and consequently of the nation large has depended on the choice of the right man for th appointment.



AN IMPERIAL DEFENDER.—The Fairey Firefly (Curtiss D.12 or Fairey Felix engine), the latest product of the Fairey Aviation Co., which is believed to be the World's fastest fighting machine.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

"To-day the Napier aero engine is the best and the leading aviation motor in the World."

Sketch
3rd Feb., 1926

Further Proof!

The following is an extract from 'The Times' of 4th June, 1926:—

Cairo - Cape - Cairo Flight

Sir S. Hoare, Secretary of State for Air, said:—
The flight from Cairo to the Cape and back by the Royal Air Force was completed on May 27th, when the four aircraft returned to Heliopolis one day in advance of the programme. A full report has, of course, not yet been received, but I am able to say that the flight was a complete success and that the four aircraft accomplished the journey of approximately 10,500 miles without any change of engines.

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For this flight from Cairo to Cape Town and back by four aeroplanes, the British Air Ministry selected Fairey machines fitted with the famous—

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Major Franco flew from Spain to the Argentine—6259 miles—in 59½ flying hours on Napier Lion engines.

Seemingly people have been appointed because they had come to the end of their particular tour of service in their existing jobs, or because they happen to have enough money to fulfil the social obligations of their new appointments, or because they wanted a change of air and occupation, or something of that sort. Very little consideration seems to have been given to whether they were men of the right type either to gain the information which the Air Force needed or to impart the information which the Air Force wanted to impart, or to instil somebody with a proper respect for the moral and intellectual qualities of the Air Force.

When the question of sending people to the College of Imperial Defence arises the greatest care should be taken to select men not only of real brain power and intelligence but men who can "keep their end up" against the best that the Navy and the Army can send to the College. Very much of the success of the Air Force of the future will depend on whether the representatives who go to that College are men who can impress the importance of the Air Force on the officers of the other Services who go to the College.

If the Air Force is represented by people who automatically give the impression that the Air Force is what Lord Thomson has called "The Cinderella of the Services," then the Cinderella idea will be carried away from the College by the other officers when they return to their Services at the completion of their course. But if we send men who are intellectually and socially and in every other way superior to the representatives of the Navy and the Army, then we shall establish definitely at the College the idea that the Air Force is in truth our First Line of Defence.

After all, grown men differ very little from boys at school and if the right tone is given to a school when it starts and if the people at that school at first start thinking along the right lines then the succeeding generations, as they come in, go on thinking along those lines. Universities, colleges of science, colleges of all sorts, including Staff Colleges, are only schools for growing or grown-up men. Quite senior officers of all three Services have remarked at one time or another how going to Staff Colleges or attending staff courses have reminded them of their school days.

There seems no particular reason why the College of Imperial Defence, even though it be for Air Commodores and Group Captains and so forth, should be very different in its beginnings from any other school for boys, old or otherwise. Therefore one prays to whatever particular member of the Fates it is who controls the destinies of the Air Force that our First Line of Defence may be adequately represented at the Empire's new school.—C. G. G.

A COLLEGE OF IMPERIAL DEFENCE.

In the House of Lords on June 16 The Lord Thomson asked the Government whether they had under consideration the setting up of a Ministry of Defence. He said that the proposal appeared to promise both efficiency and economy and had supporters in all three political parties.

Two committees had reported fully on the main aspects of the proposal. The supporters of a Ministry of Defence had claimed that substantial economies could be effected if the administration of the common services was amalgamated and carried out by a single Department. This claim was based on the assumption that under the existing conditions there was little or no co-ordination between the three Services.

There had for some years been a good deal of co-ordination between the three Services. The internal organisation of each of the fighting Services had to provide for rapid expansion on mobilisation. Consequently the governing consideration in determining the size and composition of the three Staffs was their readiness for smooth transition to a state of war.

He did not consider that a Ministry of Defence would provide an improvement so far as co-ordination of the common services was concerned. He believed it would have a tendency to sacrifice the parts to the whole and while making a show of economy would impair efficiency.

No doubt the salaries of two Cabinet Ministers would be saved. In time of War the task of a Minister of Defence would be enormously increased, and a system which placed on one pair of shoulders a stupendous burden in time of peace and doubled it when war occurred was to gamble on having permanently in the Nation's service a breed of supermen.

The report of the Salisbury Committee definitely rejected a Ministry of Defence as the best means of achieving co-ordination between the three Fighting Services. Sir Frederick Sykes in his evidence before the Committee said the real solution lay in "definite unified supreme control by a Defence Ministry, with the Prime Minister as independent Chairman, and a joint staff, which could really think out defence as a whole." But he (Sir Frederick) admitted that it was a policy of perfection, and, failing it, recommended the strengthening of the mandate and constitution of the Committee of Imperial Defence. With that Lord Thomson said he agreed.

He agreed with the recommendation of the Salisbury Report that the existing system of co-ordination by the Committee of Imperial Defence was not sufficient to secure full initiative and responsibility for defence as a whole and required to be defined and strengthened.

He would like the Committee of Imperial Defence to be a Cabinet Committee. In time of War this would form a suitable nucleus for a War Cabinet. He considered that the presence of the Chiefs of Staffs tended to interfere with the primary duty of the Cabinet, namely the determination of policy. Of course the Chiefs of Staff would be available to advise a Cabinet Committee.

The Earl of Balfour said that he disagreed from the suggestion that the Committee of Imperial Defence should be an executive body. He said that one of the advantages of the Committee of Imperial Defence was that every Department felt that it had a body which helped it and did not order it. He was certain that directly the various Departments of State felt that this was a method by which they were to be ordered by a body which was other than the Cabinet and which had its own separate secretariat, they would instinctively place themselves in a position of hostility and opposition to it. The organisation of the Committee of Imperial Defence required as an essential element that while it had every power to examine, to initiate and to revise, it had no power to order and command.

On the military side the Government was in the process of establishing a College of Imperial Defence. He did not suppose that the result of its tuition would be to make of ordinary human beings men equally competent to take command of the Army, the Fleet, or an Air expedition; but it was all important that soldiers, sailors and airmen should as a matter of course understand something of what their colleagues in the other Forces could and did do.

He was sure that the actual existing heads of the three Staffs had already become accustomed to work together sympathetically and with great anxiety to bring their separate knowledge into the common stock with a view to coming to a common opinion which they could lay before the Committee of Imperial Defence. The Government thought that this was so important that it would be desirable to give every possible emphasis to the policy recommended by Lord Salisbury and accepted by the present Cabinet.

It was therefore proposed that there should be a special warrant by the Prime Minister in which the duties of the three Chiefs of Staffs should be enumerated. He believed that the warrant would make every man who accepted the position of Chief of Staff in the three Services take office with the full consciousness that one of their duties was individually and collectively to work to the common end.

There were at this moment thirty sub-committees of the Committee of Imperial Defence doing most laborious work. This could not be described as a system deficient in co-ordination. He considered that to add to or substitute for the three existing Ministers for the Fighting Services a Minister of Defence was that they would be asking the new Minister to do more than he could possibly accomplish. At the same time they would not be asking him to do enough. Even if he could do all the work that was thrown upon him they would still not be asking him to do enough if among his duties they did not count the co-ordination of all the energies of the country for warlike purposes.

The institution of a Committee of Imperial Defence had been tried in Peace and in War and from its character it could never become rigid or bureaucratic. To do anything which would lessen its utility would be to run counter to its avowed object of giving us co-ordination

Viscount Haldane said that he knew the work of the Committee of Imperial Defence from the inside and he did not think it was possible to work that organisation by putting it under a Minister of Defence. He thought that the Committee required a Chairman who would be a medium of communication with political circles in a way that the Prime Minister could not be. Each Service had its own spirit and the utmost that could be done was to get the Staff officers of each Service to work together.

The Earl of Cavan said that since January, 1923, there had been twenty occasions on which various Governments had referred specific questions to the Chiefs-of-Staff Sub-Committee. The constitution of that Sub-Committee had not changed although Governments had. On nineteen out of these twenty occasions the Chiefs-of-Staff had submitted to the Committee of Imperial Defence a unanimous opinion. The only occasion on which the sub-committee did not reach agreement was because they had not time to finish the question before his time expired. If they had a system that was working as smoothly as that they would be extremely ill-advised to try to change.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

R.A.F. DISPLAY

Hendon, July 3rd.

AT LEAST FIVE TYPES OF FAIREY AIRCRAFT WILL PARTICIPATE IN THE R.A.F. DISPLAY TAKING PLACE AT HENDON ON JULY 3rd, 1926.

FAIREY "FLYCATCHERS" in the handicap race open to Directorates of Air Ministry.

FAIREY "FAWNS" in the attack by Day Bombers on Hostile Aerodrome, also in drill and formation flying.

FAIREY "FOX" in the Parade of New Aircraft.

FAIREY "FIREFLY" in the Parade of New Aircraft.

FAIREY III D. The return of the four III D's under Wing Commander Pulford from their Cairo—Cape Town, Cairo—England Flight.

FAIREY AIRCRAFT

Fairey Aviation Company, Ltd.,
Hayes, Middlesex.

THE KING'S CUP RACE.

Entries for the King's Cup Race must be sent to the Royal Aero Club by Friday, July 2. The winner of the Race will receive the Cup graciously presented by His Majesty King George and £100 presented by Sir Charles Wakefield.

There are also a second and a third prize of £75 and £50 respectively, presented by the Royal Aero Club.

A further prize of £100 will be given for the fastest scratch time round the course.

All pilots completing the course will receive souvenir prizes presented by the Royal Aero Club.

The race radiates from Hendon on July 9 and 10.

A few details of competing machines are available though the official entries have not been received.

The Bristol, on which Mr. F. L. Barnard will fly, is a single-seater called the Badminton, driven by a Jupiter VI. Mr. Barnard has been flying at Bristol. He is understood to have said that it is down on the expected speed. This may show that Mr. Barnard is thoroughly satisfied with his mount, as in past years he has always kept his speed dark and pretended disappointment.

It is understood that it has now been decided to fit the Vickers Vixen with a direct-drive Napier. Mr. Schofield will fly this machine.

The Parnall entry is to be a new type of fast machine with a Jupiter VI engine. One does not know who the pilot is to be.

A.D.C. Aircraft Ltd. are making three entries. The first is a Nimbus Martinsyde to be flown by Mr. Frank Courtney. The second is the Martinsyde A.D.C.1, to be flown by Sq. Ldr. H. W. G. Jones, who finished second last year. The third is another Nimbus-Martinsyde. The pilot of this was to have been Mr. H. H. Perry but he is almost certain to be abroad on an A.D.C. contract job. If he should be away his place will be taken by Mr. R. H. MacIntosh, of Imperial Airways.

Provided permission can be obtained from the Air Ministry the Gloucestershire Aircraft Co. Ltd. will enter a Gorcock (Napier). The pilot of this will be Lt.-Col. Minchin.

The Blackburn Co. are also entering a machine, which may or may not be the Airedale.

At least one entry is certain from the De Havilland Company and from Armstrong-Whitworths.

Mr. Dudley Watts is preparing an S.E.5a at Brooklands and one gathers that there may be one or two other private owners as well.—G. D.

THE INTERNATIONAL AERO SHOW.

The Chambre Syndicale des Industries Aeronautiques has arranged to hold the Tenth International Aeronautical Exhibition at the Grand Palais des Champs Elysées from Dec. 3 to 19, 1926.

As in previous years, M. André Granet has been appointed Commissary-General of the Exhibition.

All correspondence should be addressed to M. le Commissaire-General, 9, Rue Anatole de la Forge, Paris, 17e.

THE BLACKBURN IRIS.

Although the ship herself is still officially on the Secret List the daily Press has made public the fact that the Blackburn Iris made her trial flights from the Blackburn Aerodrome at Brough on the Humber on Saturday, June 19.

The Iris is a flying boat of large size and may rightly be called a ship, even by those who object to the word in relation to aircraft. She has three Rolls-Royce Condor engines giving approximately 2,100 h.p. She is intended for submarine-spotting and long-range reconnaissance. Her complement is three pilots, a navigator and a crew of about ten men.

After being christened by Mrs. Robert Blackburn the ship was flown by R.A.F. personnel on test, after which she was moored out for the night and next day was flown to the R.A.F. Experimental Station at Felixstowe.

The Blackburn Company deserve every congratulation on having achieved immediate success with a flying boat of such large size, and particular credit is due to Major J. D. Rennie, the designer, who will be remembered as having collaborated with the late Wing Cdr. John Porte in developing the Felixstowe type boats from the old original Curtiss flying boats, for which Wing Cdr. Porte was also largely responsible. And much praise is due to Major Bumpus, the firm's Chief Engineer, who is primarily responsible for all the excellent work done by the Blackburn Works.

The newspaper account says that the Iris has taken two years to construct and has cost £60,000. One takes no responsibility for these figures but one imagines that they may be approximately correct.

THE SAUNDERS VALKYRIE.

Reports from the Isle of Wight Press state that the big Saunders flying-boat (three Rolls-Royce Condor engines) which was launched about ten days ago, has been flying quite satisfactorily, piloted by Mr. Frank Courtney. The boat is known as the Valkyrie, and is in fact an "opposite number" to the Blackburn Iris.

Mr. Saunders and his designer, Mr. Beadle, deserve sincere congratulations on their success in producing a ship of this size.

It is now some years since Mr. Saunders has produced a flying machine completely of his own design and construction. The last, to the best of one's recollection, was the very interesting, but ill fated, Kittiwake twin-engined flying-boat, which was destroyed through hitting a rock when alighting.

He has since then made various flying-boat hulls of interesting design and construction. But this is the first really big seaplane that he has built, and its prompt success is the more satisfactory on that account.

It is known that Mr. Saunders is building a three-engine flying-boat with (it is said) Bristol Jupiter engines for Imperial Airways Ltd. So one hopes to see many more new and original machines of the Saunders breed.

A GIANT FRENCH FLYING BOAT.

The Chantiers de Penhoët, a well-known French dockyard who have recently entered the French Aircraft Industry, have constructed a giant flying boat fitted with five 400 h.p. Jupiter engines. This machine is now ready for test.

The general characteristics of the machine are as follows.—Span, 39 m.; length, 27.3 m.; height, 5.2 m.; wing area, 300 sq. m.; weight loaded, 18 tons; weight empty, 10 tons; wing loading, 8.5 kgs./sq. m.; power loading, 10 kgs./h.p.; speed, low down, 200 km. (125 miles) p. h.

A CZECHO-SLOVAK SUCCESS IN BELGIUM.

Early this year the Belgian Government organised a Single-seat Fighter Competition at Brussels with the object of choosing the new fighter equipment for the Belgian Flying Corps. The winner of the competition was the Avia B.H.21 (300 h.p. Hispano-Suiza engine) built by the firm of Milos Bondy of Prague, Czecho-Slovakia.

This company and its chief designers, MM. Benes and Hajn, deserve every credit for this victory in competition with several prominent French and Italian constructors, including Dewoitine, Nieuport-Delage and Fiat.

Arrangements are now being made for the Avia B.H.21 to be produced in quantity, under licence in Belgium.

THE FRENCH SINGLE-SEAT FIGHTER COMPETITION.

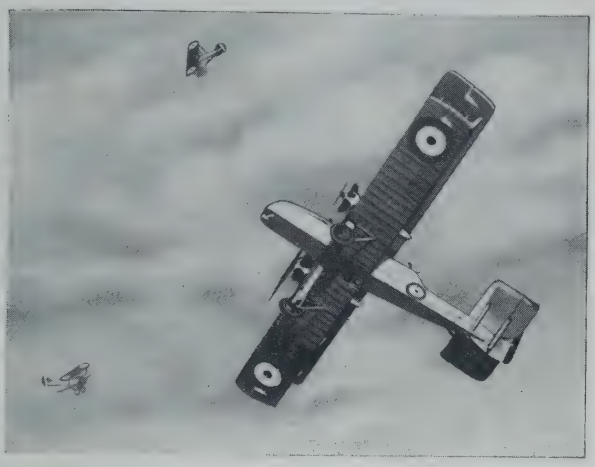
The official results of the French single-seat fighter competition organised by the Military authorities, have just been published.

This competition has suffered from a certain amount of indecisiveness on the part of the *Section Technique* who have seen fit to alter specifications and equipment of the competing aircraft with the same abandon as is common in this country.

This explains the delay in issuing the results of a competition which began some two years ago.

The machines appear below in the order of their final classification :—

Machine and Engine.	Weight Loaded.	Climb to 5000 m. (16,400 ft.)	Classification.	Speed at 5,000 m. (16,400 ft.)	Classification.
Nieuport Delage 42 (450 h.p. Hispano-Suiza)	1808 kgs.	14 mins. 34 secs.	4	249 km.p.h. (154.6 m.p.h.)	1
Loire-Gourdou-Lesseure 32 (420 h.p. Jupiter)	1376 kgs.	13 mins. 24 secs.	2	236 km.p.h. (146.5 m.p.h.)	3
Dewoitine D.12 (450 h.p. Lorraine Dietrich)	1636 kgs.	14 mins. 14 secs.	3	233 km.p.h. (144.7 m.p.h.)	4
Spad 61 (450 h.p. Hispano-Suiza)	1631 kgs.	13 mins. 16 secs.	1	231 km.p.h. (143.4 m.p.h.)	7
Nieuport Delage 46 (450 h.p. Hispano-Suiza)	1791 kgs.	15 mins. 15 secs.	8	248 km.p.h. (154 m.p.h.)	2
Dewoitine D.9 (420 h.p. Jupiter)	1491 kgs.	14 mins. 58 secs.	6	232 km.p.h. (144 m.p.h.)	6
Spad 51 (420 h.p. Jupiter)	1409 kgs.	14 mins. 54 secs.	5	228 km.p.h. (141.6 m.p.h.	8
Loire-Gourdou-Lesseure (450 h.p. Lorraine Dietrich)	1548 kgs.	15 mins. 59 secs.	11	233 km.p.h. (144.7 m.p.h.)	4
Spad 61 (450 h.p. Lorraine-Dietrich)	1563 kgs.	15 mins. 12 secs.	7	211 km.p.h. (131 m.p.h.)	11
Nieuport Delage 44 (450 h.p. Lorraine-Dietrich)	1722 kgs.	15 mins. 34 secs.	10	227 km.p.h. (142 m.p.h.)	9
Wibault 7.C.1. (420 h.p. Jupiter)	1444 kgs.	15 mins. 17 secs.	9	221 km.p.h. (137.2 m.p.h.)	10
Hanriot (500 h.p. Salmson)	1789 kgs.	16 mins. 40 secs.	12	207 km.p.h. (128.5 m.p.h.)	12



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THE ROYAL AIR FORCE.

The London Gazette.

June 15.

General Duties Branch.—Flt. Lt. F. L. Hopps, A.F.C., is granted a perm. comn. in this rank (June 1). The following Flg. Offs. are transferred to the Reserve, Class A:—J. F. Dewar (June 14); J. T. Hall (June 16). Flg. Off. G. C. B. Bernard-Smith resigns his perm. comn. (June 6).

Stores Branch.—Flt. Lt. J. V. Mason is granted a perm. comn. in this rank with effect from June 2, and with seniority of Feb. 19, 1923 (substituted for the notification in *Gazette* of June 4); Flt. Lt. C. Harvey is transferred to the Reserve, Class C, and is granted permission to retain rank of Sq. Ldr. (June 17); Flg. Off. St. J. F. Wintour relinquishes his S.S. comn. on account of ill-health (June 16).

Flg. Off. F. W. van Blommestein is dismissed the service by sentence of Field General Court-Martial (Mar. 27).

Medical Branch.—The following are granted S.S. comns. as Flg. Offs. for three years on the active list, with effect from and with seniority of the dates indicated:—S. F. Heatley, M.B., B.A. (June 2); P. H. Perkins (June 1). Flt. Lt. W. E. Hodgins, M.B., is promoted to the rank of Sq. Ldr. (June 15); Flg. Off. S. S. Proctor, M.B., is transferred to the Reserve, Class D.2 (June 17).

Reserve of Air Force Officers.—F. G. Wayman is granted a comn. in Class AA, General Duties Branch, as a Plt. Off. on probation (June 1). The following Flg. Offs are transferred from Class A to Class C:—E. O. Fuller (May 1); J. F. A. Baker (June 10); D. M. Deighton (June 15). Flg. Off C. R. H. Trevor is transferred from Class B to Class C (June 10).

The following officers relinquish their comns. on completion of service:—Flt. Lt. P. A. F. Belton, Flg. Off. J. R. Astin (Apr. 20); Flg. Off. R. Jarman, D.S.C. (May 1); Flg. Off. P. D. Robins, A.F.C. (May 8); Flg. Off. L. A. Wingfield, M.C., D.F.C. (May 29).

Princess Mary's R.A.F. Nursing Service.—The following are appointed to the permanent service (Jan. 1):—Sisters.—Miss E. A. Risdon, Miss G. Swanston, Miss J. W. Walker. Staff Nurses.—Miss F. M. Morey, Miss H. W. Cargill, Miss M. E. Grieveson, Miss A. W. Marsland, Miss M. T. Thorburn, Miss R. E. C. Polus, Miss L. H. Hardy, Miss O. Suddaby, Miss C. E. Holden, Miss U. F. C. Henson, Miss N. A. Hampton, Miss E. Wilson, Miss A. M. Herd, Miss L. B. Cartledge, Miss I. D. Mardon, Miss E. W. Griffiths, Miss V. Meikle.

Appointments.

Week ending June 22.

General Duties Branch.—Squadron Leaders J. Everidge, M.C., to No. 2 Arm. Car Coy., Palestine, 11/6. W. H. Dolphin, to Inland Water Transport, Iraq, 11/6. R. S. Booth, A.F.C., to No. 5 F.T.S., Sealand, 21/6.

Flight Lieutenants L. V. Hirst, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 28/5. R. E. H. Daniel, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 24/5. C. R. Steele, D.F.C., to R.A.F. Staff College, Andover, 4/6. F. H. D Henwood, D.F.C., to No. 19 Sqdn., Duxford, 21/6. F. O. Soden, D.F.C., to H.Q., Special Reserve and Auxiliary Air Force, 30/6. D. Gilley, D.F.C., to Aden Flight, 2/6. E. H. Attwood, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 4/6. J. E. MacLennan, to No. 2 F.T.S., Digby, 28/5.

Flying Officers W. A. D. Brook, to No. 13 Sqdn., Andover, 11/6. (Hon. Flt. Lt.) P. I. V. Rippon, to Home Aircraft Depot, Henlow, 14/6. L. W. Park and A. M. Rowe, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 4/6. A. M. Glover, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 30/5. W. J. E. Rodwell and G. H. Rawlinson, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 22/5. G. Terrell, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 28/5. E. H. Alliott, to No. 22 Sqdn., Martlesham Heath, 27/6. A. E. Golds, to No. 2 F.T.S., Digby, 27/4. H. P. Morris, to R.A.F. Depot, on transfer to Home Estab., 21/5. R. T. Taaffe, to H.Q., Fighting Area, Kenley, 5/7. A. G. Boon, to No. 13 Sqdn., Andover, 15/6. J. Hadden, to No. 2 Sqdn., Manston, 15/6.

Pilot Officers A. C. Watkins, G. H. C. Ingle, T. K. Merrett and R. A. Wills, to No. 16 Sqdn., Old Sarum, 15/6. E. L. Drew and H. J. F. Kemphorn, to No. 58 Sqdn., Worthy Down, 15/6. E. J. George, to No. 39 Sqdn., Spittlegate, 15/6. S. J. Gilbert, A. W. Whittle and J. N. Young, to No. 4 Sqdn., S. Farnborough, 15/6. J. D. Greaves and D. S. Thomas, to No. 99 Sqdn., Bircham Newton, 15/6. P. E. Grenfell and J. W. Stokes, to No. 13 Sqdn., Andover, 15/6. A. V. Harvey, to No. 9 Sqdn., Manston, 15/6. W. T. Jones, to No. 9 Sqdn., Manston, 29/6. F. W. H. Hall, J. C. Lewis and G. H. Walker, to No. 2 Sqdn., Manston, 15/6. A. E. Hill, to No. 2 Sqdn., Manston, 29/6. F. S. Hodder, to No. 13 Sqdn., Andover, 29/6. S. F. Prince, to No. 207 Sqdn., Eastchurch, 15/6. F. G. S. Wilson, to No. 2 Sqdn., Manston, 15/6.

Stores Branch.—Pilot Officer L. F. Caunter, to Station H.Q., Northolt, 11/6.

Accountant Branch.—Flying Officer J. P. A. Fulton, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 28/5.

The R.A.F. Display.

The Air Ministry announces that the seventh R.A.F. Display will take place at the R.A.F. Aerodrome, Hendon, on Saturday, July 3. Flying will continue from noon until 6.30 p.m.

Their Majesties the King and Queen have intimated their intention of being present and Group Captain H.R.H. the Duke of York has also announced that he will attend.

The object of the Display is to demonstrate the progress in the work, training and equipment of the R.A.F. It will be fully representative of the different aspects of the work of the R.A.F. and as participation in the Display is largely competitive it affords a valuable stimulus to training.

The proceeds are given to the R.A.F. Memorial Fund, which has already benefited to the extent of more than £34,000 since the Display was established six years ago.

The progress of Service flying will be illustrated by two events in which large formations of day bombing aircraft and single-seat fighters will take part respectively. The former consists of air drill by four day-bombing squadrons of the home defence force in which 36 aircraft will carry out the latest evolutions in mass formation flying. The second event will be a demonstration by six squadrons of single-seat fighters, comprising 54 machines. This exhibition is an entirely new feature and the number of aircraft taking part is the largest group which has ever flown together at one time at the Display.

About 180 aircraft, drawn from Home Defence, Army Co-operation and training units will take part in the Display. Sixteen new machines, most of which have since their inception been regarded as highly secret, will be present.

As Hendon is now the property of the Air Council it has been possible for important improvements to be undertaken by the Display Committee for the comfort and convenience of spectators at this, the greatest air display of the year. These will include better and larger accommodation, and greatly improved traffic facilities at and near the Aerodrome.

Boxes for six (price £4, £5 and £7) and tickets, 5s. and 10s., can be obtained from any agency or library or from the Secretary, R.A.F. Display, Inland Area, Bentley Priory, Middlesex. Two shilling tickets are available at Hendon Aerodrome on the day of the Display.

Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident at Northolt, Middlesex, to a Siskin of No. 41 Squadron, Northolt, on June 16, Flg. Off. Anthony Clifford Addams, the pilot, and sole occupant of the aircraft, was killed.

An Award.

The Air Ministry announces that the Air Council have awarded a piece of plate to M. Jean Baptiste Germe, skipper of the steam trawler *Louise Marguerite* of Bologne, and a sum of money to three members of the crew in recognition of their services in effecting the rescue of the three British officers of the seaplane Fairey III D., No 9570, which came down on the open sea in the English Channel on Feb. 8, 1926.

The Board of Trade have been requested by the Air Ministry to present these awards on behalf of the Air Council.

The Home-Coming of the Cape Flight.

The Cape Flight R.A.F. arrived at Lee-on-Solent on their Fairey III Ds. with Napier engines on Monday, June 21. The arrival was a worthy finish to a really great Service flight. There was nothing of the nature of a record-breaking stunt about it and yet in its way it does put up a record which will be hard to beat, in that four Service machines on their lawful occasions have covered 14,000 miles in company without mishap of any kind.

There was a certain amount of fog in the Channel but the Solent was clear and the four machines arrived just before 13.00 hours.

The Flight started from the Lake of Berre on Saturday to fly to Hourtin near Bordeaux, this stage of the journey including an overland crossing of 310 miles in the course of which the only possible alighting places would be small lakes or rivers from which it would have been practically impossible to take off again even if a safe alighting had been made.

Owing to a North-Westerly gale the Flight only reached Cette on Saturday night. The result was that they had to cover 700 miles on Sunday to reach Brest in order to keep up to schedule time on Monday. The remaining 245 miles from Brest to Lee-on-Solent was thus covered according to plan on Monday.

Three of the machines alighted in formation but the fourth which had lost touch in the fog, came in a few minutes later. The Flight was met off the Isle of Wight by two Supermarine Southampton flying boats and two seaplanes from Lee-on-Solent, which escorted them to their destination.

On landing at the slipway the personnel of the Flight were met by Air Vice-Marshal Sir Geoffrey Salmond, Air Member for Supply and Research, representing the Air Council, Air Vice-Marshal Sir Ivo Vesey, Director of Organisation and Staff Duties, and Air Commodore E. A. D. Masterman, O.C. No. 10 Group, Coastal Area, as well as by a number of officers of junior rank.

The Aircraft Trade was represented by Mr. C. R. Fairey, Mr. H. T. Vane of Napiers and Mr. H. Scott Paine, Director of Imperial Airways.

The personnel of the flight consisted of Wing Cdr. C. W. H. Pulford, O.B.E., A.F.C., Flt. Lt. P. H. Mackworth, D.F.C., Flt. Lt. E. J. L. Hope, A.F.C., Flt. Lt. L. E. M. Gillman, in charge of navigation, Flg. Off. W. L. Payne, Flg. Off. A. A. Jones, in charge of technial work, Sergeant Fitter Hartley and Sergeant Rigger Gardiner.

Sir Ivo Vesey handed Wing Cdr. Pulford a letter of congratulation from Sir Hugh Trenchard, Chief of the Air Staff, and a telegram was sent by Sir Samuel Hoare, Secretary of State for Air.

This telegram reads as follows:—

I heartily congratulate you and the *personnel* of the Cape Flight under your command on their arrival in this country. The successful

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accomplishment of this flight of 14,000 miles over land and sea without a hitch, by four Service machines, is a most creditable achievement, and the regularity with which you have been able throughout to adhere to your time-table is striking testimony to the high standard of training of the Royal Air Force and the reliability of the Fairey machines and Napier engines employed. There could be no more convincing demonstration of the assured future of aviation as a mobile and economical instrument of Imperial defence and as a reliable means of speeding up communications between this country and the Dominions.

It is officially announced that no change of engines took place throughout the whole 14,000-mile journey. One magneto was changed at Malakal on the outward journey. And engines and machines were given a thorough overhaul by the South African Air Force at Pretoria. So the journey may certainly be regarded as a triumph for British aeroplanes and engines.

Flights of greater distance have been done by foreign aviators but they have almost invariably been done with specially made or specially selected machines and engines. This flight was done with standard machines and standard engines as issued to the Royal Air Force. And the fact that all four machines put up such an exactly similar performance shows the extraordinarily high quality of our standard equipment as represented by Fairey aeroplanes and Napier engines.

The Air Ministry has laid emphasis on the fact that the journey was a purely Service exercise. And instructions were issued to the Press that interviews with the personnel of the Cape Flight were not authorised. This no doubt did something to curb the usual sickly sentiment which would have been dished out by the sensational Press. It is all the more regrettable therefore that certain photographs of what the cinematograph and newspaper trades call "heart interest" should have been taken and published in various papers.

The one thing which is really reliable about the newspaper trade is the certainty of it always giving a touch of vulgarity to a fine performance. Doubtless it was this certitude which prompted the issue by the Air Ministry of the warning against interviews. But one would have thought that the Air Ministry might have felt able to rely on the proper Service spirit of the officers and men of the flight.

Doubtless in due course when the R.A.F. is older it will be possible to place as much reliance on the good taste of the personnel as on their skill and gallantry. These heart-interest photographs are all very well for professional aviators who have to pander to the Press for propagandist purposes but they are not as done in the Services.

Apart from that everybody connected with the performance deserves all the congratulations they will get and the good marks which will be registered against them in their Service records.—C. G. G.

R.A.F. Operations in Iraq.

The Baghdad correspondent of *The Times*, in a message dated June 15, states :—

Flg. Off. F. M. Denny and AC. Hirst, No. 30 (Bombing) Sqdn., R.A.F., have been captured during operations against the Sheikh Mahmud on the northern Iraq frontier. They had engine trouble and were forced to land in hostile territory. They are being well treated. Shiekh Mahmud was deported in 1919, and has since been repatriated.

[It seems about time that a serious effort was made to catch and deport our friend Mahmud again. Still, he acts as a very good reason for exercising the R.A.F. in mountain flying after the pilots are bored with the desert.—Ed.]

The R.A.F. Memorial Fund.

The third meeting of the year of the Executive Committee of the R.A.F. Memorial Fund was held at the offices of the Fund, on June 9. Lord Hugh Cecil, P.C., M.P., was in the Chair, and there was a large attendance of Members.

The Committee voted a sum of money for current repairs at Vanbrugh Castle School, Blackheath, and also voted an annual sum of £100 towards the upkeep of the School as regards repairs.

Two cases of application for benefit arising out of the Salting Benefaction, one being a renewal, and for the education of the children of deceased officers, were considered and approved.

The Committee were informed that the Grants Sub-Committee at their fortnightly meetings, between the date Apr. 21 and the present time, had dealt with fifty cases, and that in the same period, the Secretary had dealt with fifty-seven cases of appeals for assistance.

The Committee, at the request of the Air Council, are undertaking the custody and administration of sums of money accruing from the effects of deceased officers and airmen when such sums are unclaimed at the expiration of six years from the death of an officer or airman. The money will be distributed under regulations laid down by the Air Council to widows and dependents of deceased officers and airmen as may be found necessary.

It was announced to the Committee that a panel, which has been erected in the Chapel of the Royal Military College, Sandhurst, in memory of Gentlemen Cadets who served with the R.F.C. or R.A.F. during the War, 1914-18, had been completed.

The attention of members of the Committee was specially drawn to the R.A.F. Display, which will be held at Hendon on July 3.

R.A.F SPORTS.

Boxing at Hinaidi.

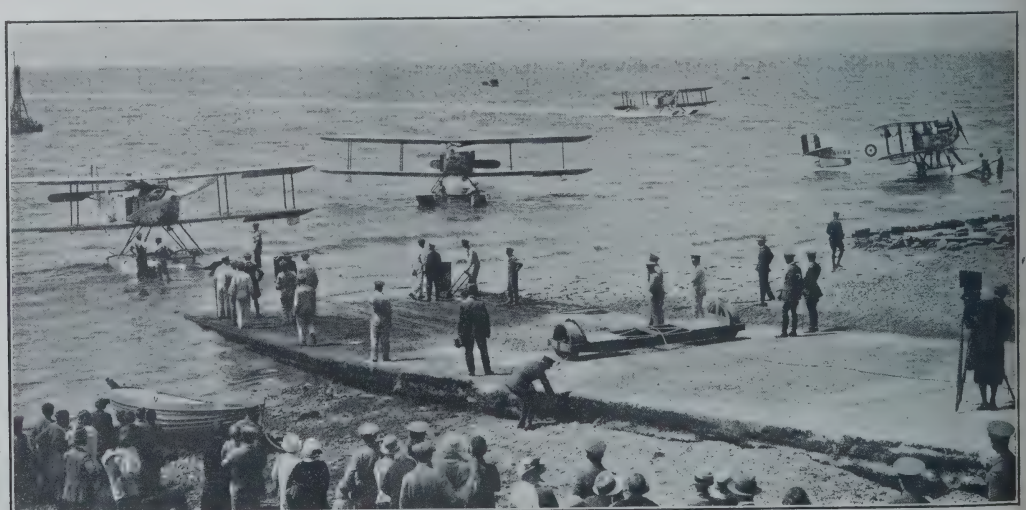
Army versus Royal Air Force :—The Inter-Services Boxing Championships were held in the A.R.S. Hangar, Iraq Aircraft Depôt, Hinaidi, on May 8. Amongst those present were their Majesties King Faisal and King Ali, His Excellency the High Commissioner, and the Air Officer Commanding.

The programme for the evening consisted of seventeen contests, eight counting towards the Inter-Services Championships and the remaining nine being special three-round contests. It was regretted that the Army were unable to put in any officer representatives owing to operations.

In the Inter-Services Championships, two points were awarded for a win, and one for a draw. The whole of the eight fights were stubbornly contested, excitement running high until the last contest, which was won by the R.A.F., thus making the number of points won by each side equal; a draw being a very fair result, as nearly all contests went the full three rounds and were won by only a small margin in each case.

Some excellent fighting was also seen in the special contests, which, considering the heat, which, on that date, was 108° in the shade, were fought at a very fast pace.

At the conclusion of fighting, the Air Officer Commanding said that before asking His Excellency the High Commissioner to give away the cups and belts, he wished first to express to their Majesties King Faisal and King Ali the pleasure it gave to all to see them there that night. He hoped that they would be pleased to come to witness the con-



"THE HOME-COMING OF THE STRANGE CHILDREN."—The four Fairey IIIDs (Napier Lion engines) of the Cape Flight, R.A.F., coming up to the slip-way at L ee-on-Solent.

DO NOT FORGET THE R.A.F. DISPLAY ON JULY 3.

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¶ Between May 6th and May 18th, seven de Havilland "Moths" covered an aggregate distance of

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tests again. He thanked the Hon. Sec., Flt. Lt. A. W. Turner, who is leaving the Command before the next Competitions, for the good work that he had put in for boxing in this Command.

Fly-weight.—A good, clean fight between L-AC. Mayes, R.A.F., and Pte. Crummey, The King's Regt., the former being declared the winner of points.

Bantam-weight.—L-AC. Ward, R.A.F., versus Pte. Beale, The King's This was a very good, clean and clever bout, Ward eventually winning on points.

Feather-weight.—A well-fought bout between L-AC. Codling, R.A.F., and Pte. Brookes, The King's, which lasted the three rounds, Codling winning on points.

Light-weight.—Pte. Scott, The King's, versus Sjt. Salter, R.A.F. This was a very clean, hard-hitting contest in which both the contestants were very evenly matched, and at the end of the third round the Judges were unable to agree. A fourth one-minute round was ordered, the result of which was that Scott was given a decision.

Welter-weight.—Pte. Jackson, The King's, versus L-AC. Belcher, R.A.F. In this bout Jackson was easily the superior man, and knocked out Belcher in the second round.

Middle-weight.—Pte. Lyons, The King's, versus Cpl. Wilson, R.A.F. This fight was the best up to the interval. Good, hard hits were exchanged, Wilson winning on points.

Light-heavy-weight.—Pte. Dyer, The King's, versus AC.1. Parkinson, R.A.F. A keen, hard-hitting fight, in which Parkinson gave way, and he was eventually defeated on points.

Heavy-weight.—L-Cpl. Drennan, The King's, versus Sjt. Ubee, R.A.F. Drennan knocked out Ubee in the third round.

SPECIAL THREE-ROUND CONTESTS.

Light-weight.—A very good bout between Pte. Doyle, The King's, and Dunbar, R.C. of S., which lasted the three rounds. Dunbar was almost knocked out in the first round. Doyle eventually won on points.

Fly-weight.—A good, smart bout between L-AC. Johnson, No. 70 Sqdn., and L-Cpl. Roadway, The King's, which resulted in the former winning on points.

Bantam-weight.—Sig. Denton, R.C. of S., knocked out L-AC. Bishop, No. 6 Arm. Car Coy., in the second round after a very brisk fight.

Feather-weight.—In this bout between L-Cpl. Jones, The King's, and L-AC. Brookes, No. 70 Sqdn., Brookes was knocked down several times in the first and second rounds, the referees stopping the fight in the third round in favour of Jones.

Feather-weight.—L-AC. Stockwell, "D" I.A.D., versus AC. Smith, "C" I.A.D. This was a very good fight. Smith fought through one round with his eye badly cut, but unfortunately had to retire, Stockwell being declared the winner.

Light-weight.—A very good fight between AC.1. Witham, "A" I.A.D., and Pte. Ayres, The King's, which lasted the three rounds. Ayres led the fighting in the first round, but in the second and third rounds Witham made use of his left lead and won on points.

Welter-weights.—In this bout Pte. Bromhead, The King's, knocked out L-Cpl. Davis, R.C. of S., in the second round. Bromhead was easily the better man, though Davis put up a plucky fight.

Welter-weight.—This bout lasted the three rounds. L-AC. Campbell, "D" I.A.D., defeated AC.2. Watson, A.H.Q., on points.

Middle-weight —L-AC. Casey, "C" I.A.D., beat Sig. Carpenter., R.C. of S., on points, after a good fight, which went the three rounds.

AIR AFFAIRS IN PARLIAMENT.

EMPIRE AIR ROUTES.

In the House of Commons on June 17, in reply to a question by SIR H. BRITTAIN, the SECRETARY OF STATE FOR AIR said that the first airship flight to India might be expected to take place in the summer or autumn of 1928. Mooring masts were being erected at Cardington and Ismailia. For reasons of economy it had been found necessary to postpone the erection of a mast at Karachi, where, however, a shed would be available.

No actual negotiations were in progress with regard to continuing communication through to Australia, but he had every hope that the present scheme of airship development would lead to a regular airship service to Australia.

[The Secretary of State for Air could hardly expect the Indian Government, which allowed civilian clerks a percentage on any sums of money they could juggle out of the pay and allowances of serving officers of the Indian Army, to erect at their own expense a mooring mast at Karachi, so presumably the mast must wait till the British taxpayer is forced to afford it.—ED.]

THE R.A.F. DISPLAY.

In the House of Commons on June 17, in reply to a series of questions by SIR H. BRITTAIN, the SECRETARY OF STATE FOR AIR said that 180 aeroplanes of 28 different types would take part in the R.A.F. Display. He hoped that the officers of the R.A.F. Cape Flight and possibly the machines as well would take some part in the course of the display.

In the House of Commons on June 18, COLONEL DAY asked the SECRETARY OF STATE FOR AIR whether, as ranks in the R.A.F. have to obtain permission from the commanding officer if they wish to marry prior to reaching the age of 26, he can say whether children born prior to the father reaching the age of 26 receive the allowance for children when the wife and family are eligible for family allowances?

SIR S. HOARE: The answer is in the affirmative.

THE ENGINEER DOBKEVICIUS.

Aviation in general, and Lithuanian aviation in particular, has sustained a great loss in the death of the young Lithuanian engineer, Dobkevicius, who died last week as the result of an accident at the Veselovka Aerodrome near Kaunas (Kovno).

Mr. Dobkevicius was testing a new monoplane of his own design and construction, named Dobi III, a small so-called single-wing machine. After flying for fifteen or twenty minutes Mr. Dobkevicius came into the aerodrome and, apparently miscalculating his landing, caught his wheels in the top of an oak tree on the edge of the aerodrome, with the result that the machine tripped and turned over.

The pilot who was strapped into the machine had his right leg broken and a bad wound over his right eye. He was taken to the Military Hospital in an unconscious condition, and died some days afterwards.

This was not Mr. Dobkevicius' first accident, for last Winter while landing in his first machine, Dobi I, he ran into a lorry and sustained injuries from which he had not entirely recovered at the time of his last accident. His Dobi II was crashed in an accident to the military pilot, Mikenis.

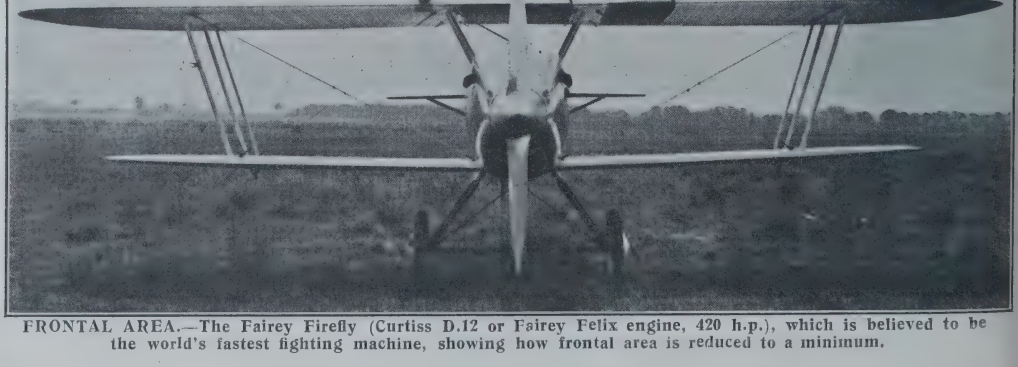
As these same trees round the aerodrome have already caused several accidents, the local papers are now agitating for their removal. That they have not been removed sooner shows that one touch of Nature which makes all Government authorities kin.

Mr. Dobkevicius was a young engineer of very considerable promise. His mother was a Russian and his father Lithuanian, and one who knew him well says that he combined all the good qualities of both nations, the steadfastness of the Lithuanian combining with the artistic perception of the better-class Russian.

This showed in his brief but noteworthy aeronautical career. With great determination he stuck to his intention to become a pilot-designer-constructor and his artistic sense showed in the beautiful lines of the machines which he built. He was of a singularly amiable disposition and made friends wherever he went.

For a year or so before constructing Dobi III, on which he was killed, he had been studying the theory of aircraft design in France, and he will be as greatly lamented there as in his native Lithuania. The talent which he showed in his designs gave promise that he would, if he had lived, have been of high value to the development of the aerial defence of his country—a small nation which has maintained its independence of thought, if not of government, through centuries of oppression only by the most intense patriotism, situated, as it is, almost surrounded by enemies and cut off entirely from friends. Therefore one feels that his compatriots and colleagues, as well as his mother and relatives, deserve the deepest sympathy in the loss of Mr. Dobkevicius.

C. G. G.



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THE CONTROL OF GERMAN AVIATION.

The agreement between the Allies and Germany for the regulation of German Aviation was signed in Paris on May 22 by M. Briand on behalf of the Conference of Ambassadors and by Herr von Hoesch, the German Ambassador. The agreement took the form of two documents, one concerning German Aviation and the other Franco-German arrangements for air lines between the two countries. As soon as the German Government has put into force the new stipulations, the Inter-Allied Air Control Commission will be withdrawn from Germany without awaiting the latter's entry into the League of Nations.

On June 16 the details of the regulations concerning German aviation were made public in Berlin.

According to these regulations the German Government has to issue a decree which forbids the Germans to construct, to have in their possession, or to import, aeroplanes or airships that are armoured, that are protected, or that are equipped with weapons of any kind, or with instruments or appliances for the dropping of bombs. The German Government is to further civil flying only within the limits of its normal development.

The construction and importation of flying machines which in their technical construction resemble the modern racing flying machine require the special sanction of the German Government. This sanction may be given when the machines are to participate in international competitions, in officially-controlled records, or in preparation for such competitions.

No grant of public money may be made for the support of flying for the training of pilots beyond the needs of aerial traffic and of the factories, and money prizes must not have the character of supporting the industry.

The training of pilots in military flying is forbidden. At the most 36 members of the Reichswehr may participate in sporting flying, flying at their own cost, but without obtaining special leave for this purpose. It is arranged further that only 36 members of the Reichswehr shall be fully-trained pilots at the end of six years. A list is to be drawn up by the German Government and submitted to the controlling authorities of all the members of the Reichswehr who pilot machines, and of all the flying machine factories, of all the machines and engines, of all the pilots and flying pupils, of all the flying companies, and of the flying associations, and of individuals who have or use aeroplanes. For police officials the same regulations apply as for the Reichswehr except that 50 of them may become trained pilots.

When these regulations come into force the control will be in the hands of the League of Nations. There are special regulations for the occupied area, for the Rhineland and for the demilitarised zone. Finally the possession is restored to Germany of the works at Friedrichshaven and of the aerial installations for international air traffic.

GERMAN CIVIL AVIATION.

On Apr. 6 German air traffic was resumed by the Deutsche Lufthansa A.G., the new company formed by the fusion of the Junkers Luftwerkehr and the Deutscher Aero Lloyd.

The final details of the amalgamation of the two companies were completed on June 15, when the various officers and committees were elected. The total capital of the new organisation is 25,000,000 marks (£1,250,000). The interests of the Reich, the Federal States, and all the provincial air transport lines are merged in the new undertaking.

The general board consists of 64 members, representing trade, industry, and the Government Departments concerned. The President is Dr. E. G. von Strauss, a director of the Deutsche Bank, who was formerly president of the Deutscher Aero Lloyd, A.G., and the Vice-President is Herr Heck, former president of the Junkers Luftverkehr A.G. The Board includes the Chief Burgomasters of Cologne, Essen and Munich. A special technical council has been formed. The management remains in the hands of Herren Merkl and Wronsky, formerly directors of the Aero Lloyd, and Herr Milch, formerly a director of Junkers.

The week prior to the opening was devoted to the introduction of the new company to the public through visits to the Tempelhofer Feld arranged for the Press and others.

The landing ground at the Tempelhofer Feld, which is now the only aerodrome for Berlin, has been greatly improved and the buildings have been rearranged and redecorated. All aircraft have been repainted with a black and white livery, with the company's device, a golden bird in flight on a blue ground, painted on the tail.

The time-table for 1926 has been published and this reveals that the company proposes to operate 45 lines, either itself, or with foreign companies, on the pool system.

The following list, which has been taken from the official time-table of the Deutsche Lufthansa A.G., shows the lines projected for operation this year. Their dates of opening vary from Apr. 6-June 1, as is shown in parentheses :—

(1) Berlin—Hanover—Amsterdam—Ostend—London (Apr. 19); (2) Berlin—Danzig—Königsberg—Tilsit—Memel (Apr. 19); (3) Malmö—Copenhagen—Lübeck—Berlin—Dresden (Apr. 19); (4) Berlin—Leipzig—Nuremberg—Munich (Apr. 12); (5) Zurich—Munich—Vienna—Budapest (Apr. 19); (6) Munich—Innsbruck (Apr. 12); (7) Basle—Mannheim—Frankfort (Main) —Cologne—Dusseldorf—Amsterdam (Apr. 19); (8) Zurich—Stuttgart—Mannheim—Frankfort (Main) — Hanover—Hamburg (Apr. 6); (8a) Essen—Mulheim—Dortmund—Frankfort (Main) (Apr. 6); (9) Malmö—Copenhagen—Hamburg—Bremen —Amsterdam (Apr. 19); (10) Hamburg—Bremen—Dortmund —Essen—Dusseldorf—Cologne (Apr. 6); (11) Rotterdam—Essen—Dortmund (Apr. 19); (12) Stettin—Kalmar—Stockholm (Apr. 26); (13) Dortmund—Essen—Cologne—Frankfort (Main)—Munich (Apr. 6); (14) Berlin—Halle—Munich (Apr. 12); (15) Berlin—Halle—Erfurt—Stuttgart—Zurich (Apr. 6); (16) Berlin—Magdeburg—Cologne (Apr. 6); (17) Berlin—Halle —Erfurt—Frankfort (Main)—Mannheim—Karlsruhe (Apr. 8); (18) Berlin—Breslau (Apr. 19); (19) Gleiwitz—Breslau—Halle —Cologne (Apr. 19); (20) Breslau—Görlitz—Dresden—Leipzig —Halle (Apr. 19); (21) London—Rotterdam—Dortmund—Cassel (Apr. 8); (22) Dusseldorf—Crefeld—München—Gladbach—Essen—Dortmund—Brunswick—Berlin (Apr. 12); (23) Flensberg—Kiel—Hamburg (Apr. 6); (24) Danzig—Marienburg—Elbing—Allenstein (Apr. 15); (25) Stettin—Schwerin—Hamburg (June 1); (26) Stettin—Stolp—Danzig (June 1); (27) Stettin—Berlin (Apr. 15); (28) Stettin—Swinemunde—Sellin —Stralsund (July 1); (29) Frankfort—Giessen—Cassel (Apr. 8); (30) Hamburg—Berlin (Apr. 6); (31) Hamburg—Magdeburg—Halle—Leipzig—Dresden (Apr. 12); (32) Bremen—Hanover—Brunswick—Leipzig—Chemnitz (Apr. 6); (33) Dresden —Chemnitz—Plauen—Nuremberg (Apr. 12); (34) Mannheim —Karlsruhe—Baden—Villingen—Constance (May 1); (35) Munich—Reichenhall (May 1); (36) Munich—Stuttgart—Baden-Baden—Mannheim—Darmstadt (Apr. 12); (37) Plauen —Gera—Halle (May 1); (38) Basle—Stuttgart—Nuremberg (Apr. 12); (39) Berlin—Danzig—Königsberg—Kovno—Smolensk—Moscow (Apr. 19); (40) Frankfurt—Frieburg—Basel—Geneva—Lyons—Marseilles; (Frankfurt—Basel, Apr. 19, Basel—Lyons, May 3, Lyons—Marseilles, June 1); (41) Basel—Chaux de Fonds de Locle (May 15); (42) Basel—Zurich (Apr. 19); (43) Copenhagen—Hamburg—Cologne—Paris—London (May 1); (44) Berlin—Essen—Colongne—Paris; and (45) Geneva—Lausanne—Zurich.

The Lufthansa has about 120 aircraft in service, 40 of which are centred in Berlin. The rest are distributed throughout Germany.

Being purely an air transport enterprise and not, therefore, bound, as was the old Junkers air line, to any one make of machine, a varied fleet is now used.

The types now in use are :—Three types of Dornier aircraft, three types of Albatros aircraft, one type of Udet and one type of Rohrbach aircraft.

ANOTHER GIANT.

Giant aeroplanes seem to be the fashion in these days. The latest to come forward with a scheme for a machine to rival that of Dr. Junkers, is the famous German aircraft designer, Dr. Ingenieur E. Rumpler, who, before the outbreak of war in 1914, had already produced tractor biplanes embodying ideas which would be modern to-day.

It was one of his machines that the German pilot Boehm flew for 24 hours without a stop in July, 1914.

Dr. Rumpler's latest scheme is for a giant monoplane flying boat capable of carrying 130 passengers and of flying 3,000 miles in 27 hours. It has four flying-boat hulls, which between them carry three tails and elevators and four rudders, and it has ten motors of 1,000 h.p. each disposed in pairs between the hulls, with another pair outside each of the outer hulls, the engines being placed on the trailing edge of the plane and driving propeller screws.

As Dr. Rumpler is one of the most serious of the World's aircraft designers, the scheme for this machine may be regarded as a practical proposition.

A POTENT GAS.

A number of paragraphs have recently appeared in the daily press concerning a new gas which is to be used as a fuel in future German airships. This gas is of practically the same density as air, and therefore its consumption makes no difference to the buoyancy of the ship. In order to take full advantage of this quality the gas must form the sole, or, at least, the main, fuel used, and must therefore be of fairly high calorific value—it is said in fact that one cubic metre of the gas is the equivalent of one kilogramme of petrol. This means in effect that on a weight basis the gas has a slightly higher calorific value than petrol.

In addition the gas is said to present very small fire and explosion dangers and to be so little dearer than petrol that the saving in hydrogen will compensate for this extra cost.

As the name of Dr. Eckener is invariably associated with the proposal to use this gas it may be assumed that the proposals are serious.

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SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to AUSTRALIA (11,500 miles).
SIX YEARS AGO	Rolls-Royce Aero Engines in a Vickers-Vimy Aeroplane flew from ENGLAND to SOUTH AFRICA (6,281 miles).
FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
TWO YEARS AGO	A Rolls-Royce Aero Engine in a Fokker Aeroplane flew from HOLLAND to the EAST INDIES (10,000 miles).
ONE YEAR AGO	A Rolls-Royce Aero Engine in a Handley-Page Aeroplane flew from BRUSSELS to the BELGIAN CONGO (5,084 miles).

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C.P.

THE FLYING CLUBS.

The London Aeroplane Club.

The total flying for the week was 50 hrs. 15 mins.

Flying instruction was given to the following members:—G. W. Quirk, A. R. H. Stewart, O. J. Tapper, F. S. Adams, G. Eady, G. H. Craig, G. W. Hall, J. H. Saffery, B. B. Tucker, J. C. Parkinson, E. A. Cook, K. V. Wright, P. O. A. Davison, J. H. S. Garne, Miss O'Brien, J. A. Simson, H. Kennedy, J. S. M. Michie, N. Jones, L. G. Sykes, S. M. Nesbitt, A. L. Angus, J. Barros, A. J. Richardson, Dr. Wall, E. D. Moss, R. Malcolm, G. N. Howe, Capt. Godfrey, G. Black.

The following members made solo flights:—L. J. C. Mitchell, H. Kennedy, N. Jones, W. Roche Kelly, S. O. Bradshaw, J. Barros, E. D. Moss, A. P. Hunt, R Malcolm, W. Hay, Major K. M. Beaumont, E. S. Brough, G. Wallcousins, Sq. Ldr. M. E. A. Wright, A. Lees, G. W. Quirk, O. J. Tapper, N. J. Hulbert, G. H. Craig, A. G. D. Alderson.

The following associate members were given joy-rides:—A. L. A. Petty, Miss Oldham, Mrs. M. E. A. Wright, Miss Salusbury, G. Valpy.

On Monday, June 14, Mr. L. J. C. Mitchell did the flying tests for his Aviator's Certificate.

Instruction in Navigation.—Instruction in Navigation will be given to members by the Pilot Instructors and for this purpose the Club machines will be flown outside the three-mile limit. The charge will be at the rate of £2 10s. per hour. Minimum time 30 mins. Maximum time 1 hr.

Purchase of Machines.—The following donations have been given towards the cost of the new machine:—Sq. Ldr. M. E. A. Wright, £18; Capt. W. Roche Kelly, £10; Mrs. G. G. Black, £3; T. C. Sharwood, £2; E. Cooper, £1; S. H. J. Garne, £1; F. C. Elford, £1; N. J. Hulbert, £1; donations previously announced, £701 5s.; Total, £738 5s.

The Lancashire Aero Club.

The weather has been good. Machines in use G-EBLR, G-EBLV, and G-EBMQ.

Mr. Stack gave instruction to:— H. Hardy 2 hrs. 10 mins., J. Leeming 1 hr. 40 mins., —. Fallon 1 hr. 40 mins., A. Benson 1 hr. 30 mins., H. P. Hall 1 hr. 10 mins., A. Abdulla 55 mins., F. Anderson 45 mins., A. Goodyear 35 mins., Dr. Wade 30 mins., F. Collinson 30 mins., B. Leigh 35 mins., C. Bert 35 mins., Sir John Rhodes 35 mins., H. Rodman 20 mins., C. Agar 20 mins., F. Barnes 15 mins., F. Gattrell 15 mins., P. Michelson 10 mins., H. Scott 10 mins. Total 14 hrs. 40 mins.

Mr. Cantrill instructed:—P. Michelson 30 mins., H. Brown 30 mins., J. Leeming 25 mins., A. Lilley 25 mins., A. Benson 15 mins. Total 2 hrs. 5 mins

Mr. Scholes instructed:—D. F. Davison 40 mins., A. Crosswaite 35 mins., H. Stern 20 mins., H. Hardy 20 mins., P. Michelson 15 mins. Total 2 hrs. 10 mins.

Solo flights were made by:—P. Michelson 1 hr 15 mins., M. Lacayo 30 mins., R. Williams 25 mins., J. Leeming 25 mins.

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The latest types of war and civil aircraft will fly past the Royal Enclosure before THEIR MAJESTIES THE KING AND QUEEN. These will include the Cierva Autogiro or "Windmill" plane and the PTERODACTYL or Tail-less machine.

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Flying from Noon until 6.30 p.m.
Gates open 10 a.m. Box (for six) £4, £5 and £7, and tickets 5/- and 10/- from Agencies Car tickets (including chauffeur) 5/-
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Tests took 1 hr. 50 mins. Joy-rides 1 hr. 50 mins. Total Solo 2 hrs. 35 mins. Dual Total 18 hrs. 55 mins. Total for week 25 hrs. 10 mins.

Members are reminded that teas may be obtained at the Club House.

The Avro 504K, with 80 Renault engine, will be delivered early in July, after being entirely rebuilt by A. V. Roe and Co. Ltd The cost of this work has been found by the Petrol Companies' gift of £200.

On Sunday, June 20, Mr. Michelson did the tests for his "A" Licence.

THE NEXT DISPLAY.—The Lancashire Aero Club has decided to postpone the Display they intended to give on July 11. This date has been found to conflict with the Royal Air Force Pageant and the King's Cup Race. The Club has therefore cancelled the arrangements and will hold its Display on Sunday, Sept. 26, at Woodford Aerodrome. Several aircraft firms have arranged to send representative types of aeroplanes for the occasion.

The Midland Aero Club.

Report for week ending June 19.

The total flying time for the week was 10 hrs. 30 mins.

The following members had flying instruction:—L. W. Goodway, R. Jackson, S. Savage, A. R. H. Miller, E. Beard, W. Swann, S. Smith, E. King, T. Gibbons.

Mr L. Knox flew alone.

Two test flights took 30 mins., one joy-ride 15 mins.

The necessary new engine parts having been received from the A.D.C. on Thursday, EBLT is now in commission again.

Unfortunately solo flying this week has been considerably restricted owing to the present uncompleted stage of the Air Ministry work on the aerodrome in preparation for the formation of an Auxiliary Squadron.

A Club badge is being prepared and will be circulated to members shortly.

The Club recently had the honour of having three Hawker Woodcocks, belonging to No. 3 (Fighter) Sqdn., R.A.F., housed in their hangar for three weeks. As previously recorded in THE AEROPLANE, these machines were stationed here for the Birmingham Torchlight Tattoo.

The Private Owners' Club.

The British Private Aircraft Owners' Club held its first flying meeting on June 20, at Stag Lane aerodrome. Five owner-pilots turned up with their machines and left the aerodrome at 11.30 and flew to Cowes to lunch. They then flew to the Shoreham aerodrome, where they had tea.

During the evening four of the members flew back to Stag Lane and the fifth, Dr. Whitehead Reid, returned direct to his home in Kent.

Dr. Whitehead Reid flew an S.E.5, Mr. T. H. V. Richardson an Avro, and Sir John Rhodes, Capt. Geoffrey de Havilland, and Mr. D. Kittel (the honorary secretary of the Club) all flew de Havilland Moths.

The British Private Aircraft Owners' Club was formed in February, 1926, with eleven founder members, all of whom own and fly their own machines. There are now seventeen members.

The Southern Aeroplane Club.

The Southern Aeroplane Club held its opening meeting on Saturday, June 19. Sir Sefton Brancker assisted at the ceremony and a very good programme was given. The first flight was made by Mr. Pashley, the survivor of the well-known Pashley brothers on an Avro, after which the Club's first pupil to qualify for his aviator's certificate made a flight on a Centaur, one of the machines built just after the War 1914-18 by the Central Aircraft Company.

Mr. Hubert Broad gave an excellent exhibition of aerobatics on a de Havilland Moth. Afterwards a display of air fighting, low bombing and so forth was given by a flight of No 56 Sqdn., R.A.F., and Sq. Ldr. Vincent, O.C. No. 56 Sqdn., himself gave a very pretty exhibition of flying.

One gathers that the Club, although it is not subsidised by the Air Ministry, is quite firmly established, as it has the backing of a wealthy American.

Club Moths and Passengers.

The following letter should settle once and for all a vexed question:—

Sir,—The publication of this may serve to throw light upon the apparently very vexed question of passenger flying as done by "A" licence Club pilots (and others).

As a member of the London Club, but not, as yet, the possessor of even an "A" licence, and yet—as you have noted in THE AEROPLANE, if you read it—now flying solo when I am able to circumvent the instructor, I am in a unique position to throw light upon the aforementioned question.

Now, you (or someone else) say, firstly:—"There is nothing to prevent him (the "A" pilot) from landing away from his own aerodrome, and taking up friends as passengers"

There most assuredly is, Believe me. The principle reason being the "A" licence pilot himself. Because we soloists have not as yet broken up very many homes you jump to dreadful conclusions. It isn't natural. It's all very difficult and very wrong.

Actually, we soloists are proud indeed to land a machine somewhere within the confines of Stag Lane Aerodrome at all. But as for fields—Well!

Secondly, a pilot member does not hire a machine for solo flying at the rate of 30s. per hour, but actually 20s.—and returns to solid food simultaneously. You will accept this gentle correction in the right spirit.

(Signed) STANLEY ORTON BRADSHAW.

VIVE LE SPORT.

Several fighting bulls strayed from their grazing ground onto an aerodrome at Seville, and attacked two Junkers monoplanes which were reclining peacefully in a shed. The unpremeditatedness of the attack took the aeroplanes unawares and in spite of the apparent solidity of the Junkers all-metal aeroplane the bulls scored heavily, and, if one is to believe the newspaper reports, the aeroplanes were reduced almost to scrap.





Commandante Franco **Alan Cobham** **Marchese De Pinedo**

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 23; Tuesday, 22; Wednesday, 22; Thursday, 21; Friday, 20; Saturday, 26; Sunday, 6.

IMPERIAL AIRWAYS LTD :
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 66, passengers 521, freight 20 tons.

AIR UNION :
Paris—London: Machines 40, passengers 164, freight 12 tons.

K.L.M. :
Amsterdam—Rotterdam—London: Machines 19, passengers 78, freight 5 tons.

SABENA :
Brussels—London: Machines 12, passengers 29.

DEUTSCHE LUFTHANSA AG. :
Berlin—London: Machines 0, passengers 0.

SPECIAL :
Machines 3, passengers 2.

Total number of trips by British Machines, 69, carrying 523 passengers. Foreign Machines, 71, carrying 271 passengers.

Comparative Figures :

Week ending June 20 :
Machines, 140; Passengers, 794; Crews, 178; Total personnel, 972.

Corresponding week, 1925 :
Machines, 162; Passengers, 718; Crews, 206; Total personnel, 918.

Corresponding week, 1924 :
Machines, 145; Passengers, 467; Crews, 179; Total personnel, 646.

Corresponding week, 1923 :
Machines, 120; Passengers, 441; Crews, 194; Total personnel, 635.

Corresponding week, 1922 :
Machines, 135; Passengers, 272; Crews, 193; Total personnel, 465.

Corresponding week, 1921 :
Machines, 105; Passengers, 381; Crews, 122; Total personnel, 503.

Corresponding week, 1920 :
Machines, 113; Passengers, 217; Crews, 122; Total personnel, 339.

Croydon Notes.

The good record of Civil Aviation has unfortunately been marred this week by two accidents.

The first occurred on Saturday, when Mr. Horsey, on a W.8b, G-EBBI, with eight passengers was coming from Amsterdam. The weather necessitated his crossing the Channel at a height of 1,000 ft. When still some distance off Dover something broke internally in one engine. Mr. Horsey managed to make the coast and got down all right. When pulling up however the machine swung round and the undercarriage collapsed, causing considerable damage to the lower planes and the fuselage.

One gathers that Mr. Horsey very skilfully saved, by sheer good piloting, what might have been a disaster. With only one engine of old vintage he managed to keep the machine up till he reached the coast. But he could not clear the top of the cliffs at Dover, so he scraped into the valley over the town, much as Bleriot did in the first Channel crossing.

The second accident happened on Monday of this week to a Fokker. Mr. Van Dyk was coming to Croydon from Amsterdam and when crossing the Channel he encountered a sea fog. This fog was very patchy and most of the day it hung about 50 feet off the water. Mr. Van Dyk came out of the mist just of Seabrook, near Hythe, and alighted in the edge of the sea. From the sea coast the land rises very sharply, almost cliff-like, and the top of this cliff was in the fog, and it seems that Mr. Van Dyk had no choice other than to put the machine down where he did. This seems to have been another case of quick thinking and good piloting saving an accident.

The Hampstead has now had her new-type Jaguars removed after test as it seems that they are not quite right. This machine was delivered nearly a year ago and still it is not in tune.

The Vickers Vanguard has been doing quite an amount of flying. Major Brackley has been piloting with great *aplomb* on test.

Among the passengers who arrived by air at Croydon on Monday was M. Jean Borotra, the 1924 Wimbledon champion. M. Borotra, unlike most tennis players, puts his business before tennis, before even Wimbledon Tennis. Every year he goes to his Paris office on the Monday morning of Wimbledon week, clears up outstanding business, and catches the midday machine from Le Bourget.

On Monday he was held up by fog, and only got to Croydon 15 minutes before he was due to receive his medal from the King as a Wimbledon champion. He changed into flannels in the car *en route* to Wimbledon, and shot onto the Centre Court in the nick of time. Mr. Borotra is himself a pilot of ability.

At A.D.C. Aircraft Ltd, Mr. Perry spent the earlier part of the week flying between London and Nottingham in connection with the Aquatic Sports taking place at Nottingham. He was also flying a Nimbus-Martinsyde and a Nimbus-D.H.9.

Mr. Courtney flew to Manchester and back on a D.H.9a on Tuesday.—G. D.

MR. COBHAM'S FLIGHT.

Mr. Cobham will try and get away on his flight to Australia at the end of the present week or early next week. It is understood that Sir Charles Wakefield has once again stepped into the breach and has supplied what finance was lacking.

What a score for Mr. Cobham it would be if he took with him some photographs of the Test Match which starts at Lords on Saturday and got them through to Australia in record time.

Anyhow, if he starts before the next issue of THE AEROPLANE comes out, one wishes him luck on the trip on behalf of all readers of THE AEROPLANE and a happy issue out of all sandstorms, sheiks, emus, and other acts of God or the King's enemies.—G. D.

PARIS—TOKYO.

On June 14 Capt. Pelletier Doisy and M. Carol, who are attempting to fly from Paris to Tokyo via Russia, on a Breguet XIX biplane (450 h.p. Lorraine-Dietrich engine), arrived at Krasnoyarsk.

On June 15 they arrived at Irkutsk.

On June 16 they flew from Irkutsk to Chita.

On June 17 they reached Mukden, having flown through dense fog all the way from Chita.

On June 18 they flew to Pekin instead of proceeding to Heijo the reason for this deviation from the straight route to Tokyo being the presence of the "Nougai," a thick fog prevalent over the west coast of Japan at this time of the year. The presence of this fog has resulted in the termination of the flight at Pekin. The distance from Paris to Pekin, 6,520 miles, has been covered in 63 flying hours spread over seven days.

The itinerary of the flight is as follows :—June 11, Paris—Warsaw (1,525 kms.). June 12, Warsaw—Moscow (1,150 kms.). June 13, Moscow—Kourgan (1,930 kms.). June 14, Kourgan—Krasnoyarsk (1,750 kms.). June 15, Krasnoyarsk—Irkutsk (900 kms.). June 16, Irkutsk—Chita (625 kms.). June 17, Chita—Mukden (1,375 kms.). June 18, Mukden—Pekin (700 kms.).

ROTTERDAM—MARSEILLES AND BACK.

On May 28, a notable non-stop flight from Rotterdam to Marseilles, a distance of 1,020 kilometres, was made by the K.L.M. Air Liner H-NADJ fitted with a Jupiter engine.

The machine started from Waalhaven Aerodrome early in the morning against a strong head wind. At Reims the course altered to a south-easterly direction with the wind at the side. But the later stages of the flight were completed with the aid of a following wind.

The r.p.m. of the Jupiter engine were maintained throughout at 1,550 and the total distance was covered in 6 hrs. 35 mins.,—an average speed of 155 kilometres an hour.

The petrol consumed during the flight averaged 102 litres (24.8 gals.) per hr., the machine flying at altitudes varying from 1,200 to 1,500 metres.

On the same day the machine was flown back to Dijon, and owing to the fact that very heavy rainstorms were encountered it was decided to stay there for the night. The next morning however, the machine proceeded to Paris to take up a load of passengers and merchandise and flew back to its base at Amsterdam.

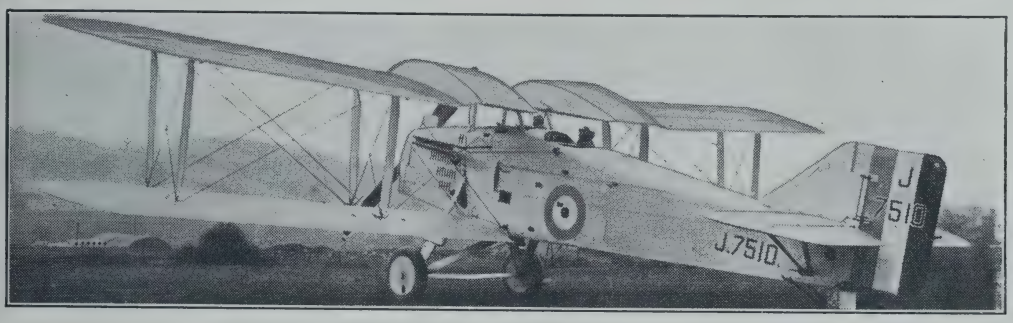
The total flight from Rotterdam to Marseilles and back occupied 16¼ hours actual flying time (including the 6⅝ hours non-stop flight on the outward journey) and during the whole period the K.L.M. Company report, "the engine ran remarkably well, without any fault."

The machine used was one of the standard F.VIIa type fitted with the Jupiter engine, which the K.L.M. Company have now adopted as standard for service on their air lines.

Owing largely to the light weight of the Jupiter engine this machine carries a considerably higher revenue-paying load per h.p. than does any other commercial aircraft at present in

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WESTLAND



THE photograph is of the Yeovil Day Bomber, one of the latest machines built at the Westland Aircraft Works. It marks an important stage in the development of this type of aircraft possessing among its other features of superiority a good view for pilot and observer in all directions, stability (for accurate bombing), gravity feed of petrol from tanks in upper plane, and oleo-rubber undercarriage with wide track. It has a Rolls-Royce Condor Engine of 670 h.p. with Leitner-Watts metal propeller. The performance of the machine which was built for the Air Ministry is highly satisfactory.

At the Westland Aircraft Works, machines of all types have been designed and constructed for the British Government and for industrial purposes.

The personnel of these Works includes an expert staff which is available to consider specifications for aircraft required by Foreign and Dominion Governments or private customers. A fully equipped 4 foot wind channel is available for model experiments.

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YEOVIL.

Telegrams:
Aircraft 141, Yeovil.

use, and notably successful results are being achieved. That pioneer firm, the Bristol Aeroplane Co. Ltd., may well be proud of the continuous chain of Jupiter successes.

TOKYO—COPENHAGEN.

On June 15, Lieut. Botved, of the Danish Army, who after having flown from Copenhagen to Tokyo, on a Fokker C.V. (450 h.p. Lorraine-Dietrich engine), is now returning to Copenhagen via Russia, left Tokorozawa aerodrome, Tokyo early in the morning, landed at Osaka at 07.55 hours to refuel, and finally reached Heijo, Corea, at 17.20 hours. He expects to reach Copenhagen in ten days from Tokyo.

NEW YORK—BUENOS AIRES.

Señor Duggan, Lieut. Olivero and Lieut. Campanelli, who are attempting to fly from New York to Buenos Aires on a Savoia 59 flying boat arrived at Trinidad on June 8 and at Demerara on June 10.

WIRELESS AIDS TO ALL-WEATHER FLYING.

The progress that has been made since the War 1914-18 in all-weather flying is largely due to the perfection of modern Marconi wireless equipment for flying machines and aerodromes.

Sir Samuel Hoare, Secretary of State for Air, in a recent address at the Royal Aero Club, said he had a list of cases in which wireless had been of tremendous help to pilots working in weather which a few years ago would have been regarded as impossible for flying. Reports received by the Air Ministry fully confirm Sir Samuel Hoare's tribute.

As long ago as October, 1923, an air line pilot, suspecting that he was off his course during a bad weather spell over Belgium, called for a wireless bearing to be taken. He was given "two miles S.W. of Thielt." Setting a course for Ostend from this position, he came out right over Ostend aerodrome.

On a November day last year, with thick fog prevailing generally, Captain Barnard piloted the only machine to leave Croydon all day. He first ascertained that visibility was rather better at Dunkirk and decided to go out with assistance from the Wireless Direction Finder. He received positions at Tonbridge, Pluckley, Folkstone, and Calais and reached Dunkirk safely, having navigated entirely by his direction-finder positions. He did not see the ground from Croydon to Dunkirk.

On the same day another pilot got into Croydon by means of two wireless direction-finder courses.

A number of other reports have been received of pilots flying above the clouds during bad weather and navigating entirely by direction-finder, or only catching glimpses of the ground once or twice over very long distances.

Snow, probably a worse enemy to flying even than fog, drove one pilot off his course in a journey from St. Inglevert to Croydon. Under the impression that he was making good headway towards his destination he flew west until off Brighton. Fortunately, he there received the wireless instruction "Fly North by East," and eventually reached East Grinstead. But for petrol shortage he would have reached Croydon. This petrol failure might have occurred over the sea but for the direction-finder, as, according to dead reckoning, no one would have computed that the machine was anywhere near Brighton.

Mr. Barnard gave the direction-finder a thorough test in more pleasant circumstances two years ago. At Boulogne he took his eyes off the ground and flew to Croydon entirely by direction-finder bearings. He was brought right over the aerodrome.

The standard wireless equipment on British Civil Aircraft is the Marconi Tye A.D.6, a 150-watt telegraph-telephone set. It has been designed for commercial services when a wide band of wave lengths is required for communication by telegraphy or telephony with the aerodrome ground stations up to distances of 100 to 200 miles. It has an ingenious "remote control" arrangement which enables it to be operated by a few switches while the apparatus itself is stowed away wherever convenient.

WITH MR. COBHAM TO THE CAPE.

The film taken by Mr. Basil Emmott of Mr. Alan J. Cobham's flight to Cape Town is being shown at the Marble Arch Pavilion, W.1.

The film begins at Athens and ends at Cape Town, and is a very fine example of the sort of thing which might be shown periodically with advantage in every cinema in the country.

The cinema industry seems to regard its public as lacking in any kind of intelligence, but a few films like Mr. Emmott's would very soon prove that even a cinema "fan" can appreciate a good thing.

The film is shown at 3.45, 6.30 and 9.30 every day, and



Supermarine "Southampton" Twin Engined Flying Boat.

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everybody who is interested in travel or flying or Africa should make a point of seeing this film.

The programme this week at the Marble Arch also includes an excellent film of Wing formation practice by the R.A.F. at Spittlegate.

A GOOD ADVERTISEMENT.

Referring to a paragraph that appeared on page 552 of the issue of The Aeroplane for June 2, under the above heading, it may be interesting to note that the booklet in question was compiled, designed and printed by Hunt, Barnard and Co. Ltd., of Kingsway House, Kingsway, W.C.2.

Again, one strongly recommends the advertisement departments of all aircraft firms, if they have not already received the leaflet from the Hoyt Metal Company, of Great Britain Ltd., to get a copy and study it as an example of how to attract attention and drive home facts. If they are impressed, as no doubt they will be, they are advised to get in touch with the above firm should they require any form of publicity whatever. Hunt, Barnard and Co., Ltd., specialise in every possible branch of publicity work with perhaps a special emphasis on engineering in all its phases, in which they have considerable experience.—L. B.

DOPE.

The Fairey machines which have flown to Cape Town and back were all doped with Cellon. As the flight was purely a Service affair there were of course no advertising cables relating to extremes of heat in Central Africa, when one burnt one's fingers on the wings, or extremes of cold in Europe when one froze one's toes on the tail, but it may be taken that the Service flight met with conditions very similar to those encountered by Mr. Cobham.

Incidentally the Bristol Bloodhound, which covered 25,000 miles on test with the Jupiter VI, was also doped with Cellon.

PLYWOOD.

The four Fairey machines which flew from Cairo to the Cape and back to Lee-on-Solent had Mallite Plywood used in their construction. One gathers that the condition of the Plywood was as good as new when the machines returned, in spite of tropical heat and sea air and spray.

MORTGAGES AND CHARGES.

Harrogate Aerodrome and Land Development Co. Ltd.—Issue on May 31, 1926, of £500 debentures, part of a series already registered.

PERSONAL NOTICES.

Death.

ADDAMS.—On June 16, at Northolt, as the result of a flying accident, Anthony Clifford Addams, Flg. Off., No. 41 (Fighter) Sqdn., R.A.F.

Mr. Addams joined the R.A.F. with a Short Service Commission in July, 1923, and was trained at No. 2 F.T.S., Duxford. In July, 1924, he was posted to No. 41 (Fighter) Sqdn., and in September of the same year to No. 1 (Fighter) Sqdn. at Hinaidi. In April, 1925, he was promoted to the rank of Flg. Off. and restored to the Home Establishment, where he rejoined No. 41 Sqdn.

Marriages.

HEMSLEY—WINGFIELD.—On June 19, at All Saints, Ennismore Gardens, Knightsbridge, Bernard William Hemsley, R.A.F., to Phyllis Evelyn, younger daughter of Mr. and Mrs. G. Arthur Wingfield, of 31, Albert Hall Mansions, Kensington Gore, S.W.

RILEY—VAN OS.—On June 19, at St. Mary Abbot, Kensington, the marriage took place between Mr. Alan Incell Riley, A.F.C., R.A.F., son of Mr. Charles Riley, of Tiverton, Clacton, and Charleville Road, W., and Miss Ella Marie Adele van Os, only daughter of the late Mr. S. G. van Os and of Mrs. van Os, of Adele House, Kensington, W.

Forthcoming Marriages.

BAILLIEU—COLEMAN.—An engagement is announced between Mr. Tom Latham Baillieu, D.F.C., third son of the Hon. W. L. Baillieu, of Melbourne, Australia, and Miss Ruth Marian Coleman, only child of Mr. and Mrs. F. A. Coleman, of Red Roofs, Amersham, Bucks.

BUSK—MORRIS.—The engagement is announced between Flt. Lt. C. W. Busk, M.C., R.A.F., younger son of the late R. W. Busk and Mrs. Busk, of Kelvin, Woking, and Enid, younger daughter of the late Rev. L. and Mrs. Morris, of Dundaff Muir, Camberley.

LANGRISHE—GRIGG.—The marriage arranged between Mr. Terence Hume Langrishe, late Irish Guards and R.A.F., only surviving son of Sir Hercules Langrishe, Bt., and Lady Langrishe, of Knocktopher Abbey, county Kilkenny, and Joan, eldest daughter of Major Ralph Grigg, late 18th Hussars, and Mrs. Grigg, of 42, Hertford Street, Mayfair, will take place on July 8.

Births.

ANDERSON.—On June 18, at Old Court, Hanger Hill, Ealing, to Alma (*née* Chamberlain), the wife of D. F. Anderson, D.F.C., R.A.F.—a son.

ATKINSON.—On June 16, at Ambercroft, Maidenhead, Berks, to Nancy, wife of Sq. Ldr. E. D. Atkinson, R.A.F.—a son.

CURRY.—On May 26, to Major John Curry, U.S. Army Air Service, and Mrs. Curry, McCook Field, Dayton, Ohio—a daughter (Sheila).

KEEP.—On June 16, at The Old Vicarage, Montacute, Somerset, Marjorie Christine (*née* Bruce), wife of Stuart Keep—a daughter.

PATTINSON.—On June 17, at 45, Linden Gardens, W.2, Mabel, wife of Wing Cdr. L. A. Pattinson, D.S.O., M.C., D.F.C., R.A.F.—a son.



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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXX. No. 26 SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"PEOPLE WILL NOT LOOK FORWARD TO POSTERITY WHO NEVER LOOK BACKWARD TO THEIR ANCESTORS."—*(Burke.)*



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FIFTEEN YEARS AGO:—A Bristol Box-Kite performing at Brooklands in 1911.

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SEE PAGE 667 FOR PALMER LANDING WHEELS AND TYRES. (223)

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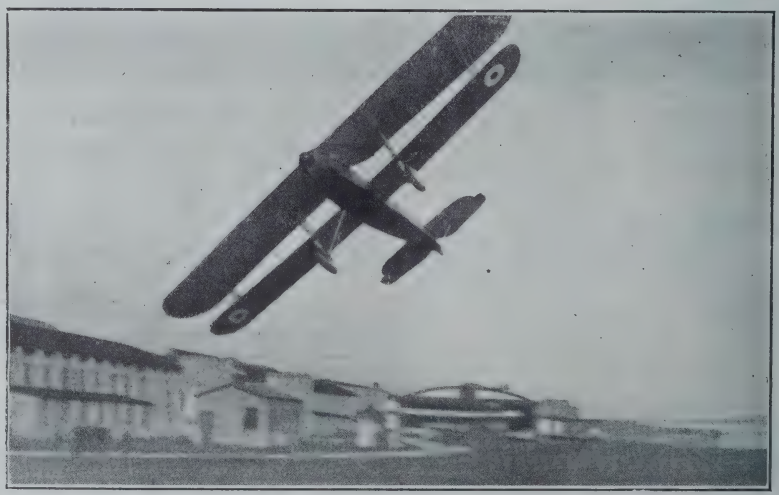
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(Aeroplane Photograph.)

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JUNE 30
1926.

THE AEROPLANE

Incorporating
Aeronautical Engineering

VOL. XXX.
No. 26

The Editorial Offices of "The Aeroplane" are at 175 Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407
Accounts and all correspondence relating to Publishing and Advertising, should be sent to the Offices of Aeronautics Ltd., 14. Bream's Buildings, E.C.4.
Telephone: Holborn 4?6.
Subscription Rates, post free: Home 3 months, 8s.; 6 months, 16s.; 12 months 32s.
Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months. 35s. Canada, 1 Year, 8s.
U.S.A., 1 Year, $8 50c.

ON THE FIFTEENTH BIRTHDAY OF "THE AEROPLANE."

On June 8, 1911, there appeared for the first time a little penny weekly paper called THE AEROPLANE. To-day in a larger form it celebrates the completion of its fifteenth year. Strictly speaking this is not its birthday, but it is the end of its thirtieth half-yearly volume, and so it seems more fitting to celebrate the occasion on this date.

Fifteen years is quite a long time in the development of an entirely new vehicle such as the aeroplane, and naturally considerable progress has been made in those fifteen years. Yet when one looks back at what was being done fifteen years ago the actual progress seems lamentably small considering the time and money that have been spent and the number of lives which have been lost in achieving such progress as we have made.

All through those years we have been continually on the verge of a great boom in aviation and yet that boom has never arrived. But it will come some day just as surely as there was a boom in canal building a century or more ago and as there was a boom in railway building seventy years or so ago and as there was a boom in cycle building thirty years ago and as there was a boom in motor-building fifteen years ago or thereabouts.

Every method of transport and every industry has its periods of booms and slumps and the trough of every slump is almost always a little higher than the peak of the last boom but one. And so progress is made by a kind of process of climbing up three steps and slipping back two.

It is laborious but it is educative and it weeds out the weaklings. The satisfactory thing about Aviation is that so many of the pioneers survive—thus showing that they, at any rate, were not weaklings.

THE FIRST BOOM IN AVIATION.

When one writes of booms and slumps of this kind one does not refer solely to the commercial aspect or merely to factory output. One includes the general attitude of the public towards the art, pastime or industry concerned. Which is only reasonable, seeing that a trade boom can only be the result of mass psychology working on the people.

When THE AEROPLANE started, fifteen years ago, one of the little booms of aviation was in progress. The first flight in the World, that by Orville Wright on Dec. 17, 1903, had left the World cold. Hardly anybody believed that he had done it.

But when the Wright Brothers began serious flying in 1908, and the newspapers began to talk about their flights, the general public began to take notice. They believed that certain men, whom they classed among trapeze artists and professional parachutists and so forth, had actually flown. But the public did not believe in flying.

On the other hand, of course, there were very many people


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FIFTEEN YEARS AGO.—The late Douglas Graham Gilmour flying over Henley Regetta on a Bristol Box-Kite in 1911, an act which caused his suspension by the Aero Club and prevented him from competing in the first Circuit of Britain.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.

whose imaginations outstripped their practical common sense. They forthwith prophesied air lines all over the World and the development of enormous Air Forces,—to the continual accompaniment of that horrid verse of Tennyson's about "The nations' airy navies grappling in the central blue," with its terrible Cockney rhyme about the "ghastly dew" raining from them.

That confounded quotation has haunted aviation ever since flying began and has been the favourite argument of every aeronautical Pickwickian fat boy who wanted to make our flesh creep. But between these two extremes the great mass of the people of the World took hardly any interest in flying at all.

Santos Dumont, the Parisian-Brazilian, and Ellehammer, the Dane, had made short hops on power-driven kites—one can hardly call them aeroplanes—within a few weeks of one another in 1906. But Louis Blériot and Henry Farman were actually the first Europeans to make anything that could be regarded as flights worthy of consideration. They reached this stage in 1908 after years of experiments and hard knocks.

Their attempts to stagger through the atmosphere were quite put in the shade when Wilbur Wright arrived in Europe in 1908 at the invitation of sundry Americans living in Paris.

The Wright biplane was an impossible flying machine. It was unstable in every direction and all its centres of pressure did everything that they ought not to do. And its side area was all in the wrong place. Consequently nobody could fly it except a man with the physical reactions of an acrobat and juggler.

But the thing had quite a good wing curve. It was constructed without much regard to factors of safety, so it was abnormally light, and it had large slow-running airscrews which were extremely efficient for their period. Therefore in the hands of an expert it actually put up a performance far surpassing anything else of the same time.

One of the curious facts of life is that the easiest way of doing a thing for the first time is always the wrong way. Anybody can hit a golf ball and anybody can push a bicycle and anybody can stagger along on skates. But to play golf or ride a bicycle or skate properly one has to unlearn what appears at first to be the natural way of doing it.

The Wright biplane was something like that. It was the easiest way of achieving results, but it was a dead-end design which could never have been developed past the point which it reached. The Cody biplane in England, and later the Valkyrie monoplane—which were also of what came to be called the "tail-first," or *Canard*, type—were other examples of the same dead-end types. The result was that with the exception of the Wright Brothers themselves and one or two people who gave up flying very shortly after learning, nearly all pilots of the original Wright type machines were killed and ultimately the Wrights themselves came back to the natural aeroplane with its tail behind, which is now the accepted type. (With all respects to Captain G. T. R. Hill.)

The performances of Wilbur Wright stirred up quite a lot of interest in France and all over Europe with the result that something like a little boom in aviation was started. Money was forthcoming with which to build other aeroplanes and the first Aero Show of machines which had actually flown or were likely to fly was held in Paris about Christmastide, 1908.

A Personal Reminiscence.

Here perhaps one may indulge in a little personal reminiscence, for this was where one first embarked in aviation.

At that time one was on the staff of Iliffe and Sons Ltd. of Coventry, the proprietors of *The Autocar* and various other motor papers. Walter Staner, the Editor of *The Autocar*, not only one of the best men who ever lived but one of the most far-sighted, saw that this Show actually marked something fresh in the development of motor transport, so he decided that *The Autocar* must have a proper report of the Show.

The late Harry Swindley, who was the father of the now well-known actor, Ion Swinley, was then the London Editor of *The Autocar*, and he should have gone to Paris to report the Aero Show. But he said that he was not gong to have his Christmas Holidays spoiled by going to Paris, especially to report such silly things as flying machines. One happened to be spending Christmas with some friends at Leamington, and on the morning of Boxing Day Walter Staner arrived by car and with that kindliness which was one of his most lovable traits apologised for butting in on a holiday and asked whether one would very much mind going to Paris to report this Show.

In those days one had no more interest in flying machines than had anybody else in the motor trade, but one was always ready at any time to do anything on Earth for Walter Staner. One explained that one's knowledge of French was that of the average schoolboy, that one had never been to France, and that one knew nothing at all about aeroplanes. "Those," said Staner, "are the best possible reasons why you should go. You will approach everything with an entirely open mind." So one went.

One arrived, a complete stranger in a strange land, in the bitterest cold that one had ever experienced, and one penetrated into the Grand Palais with that same difficulty which has been the lot of British journalists at all French Aero-Shows ever since. One was received with that peculiar French courtesy which is so much ruder than German brusqueness.

Knowing no French one wandered from stand to stand, just looking at things, till presently one found oneself looking at a model of the Wellman-Vaniman Airship, in which the promoters hoped some day to cross the Atlantic. There was a cheery little fair man behind the counter and a Frenchman came up and asked him something. He replied "Mooseer Vaniman ay justimong party. Eel ne serra pah eesy poor un autre ooer." One understood that. It was the first French one *had* understood. And so one concluded that the speaker must be English, and forthwith charged him with the fact.

He proved to be one Harding, a motor-cycle racing man who lived in Paris, representing an English firm, and had a business of his own and was very much interested in aircraft. He was a thorough little sportsman. He devoted the whole of the rest of the day to taking one round the Show and asking questions, and explaining as well as translating the answers.

Not only did one gather from him everything that the actual exhibitors claimed for their machines but one also learnt what he himself had acquired laboriously in the course of the previous six months or so in which he had been very closely in touch with the development of flying in France.



FIFTEEN YEARS AGO.—Mr. T. O. M. Sopwith, now Chairman of the Society of British Aircraft Constructors, with his sister, Miss May Sopwith, on a Wright Biplane at Boston, U.S.A.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.


LEONARD BRIDGMAN 1926
ROYAL AIR FORCE
DISPLAY
HENDON
SATURDAY · JULY 3.



FIFTEEN YEARS AGO.—The Bristol School on Salisbury Plain, showing the Prier Monoplane built for the first Circuit of Britain. Sir George White, the great founder of the Bristol Co., is seen in front of the machine, in a white hat.

From him one learned for the first time that it is the upper surface of an aeroplane wing which does the lifting and not the lower surface. And it was he who first really infected one with what is, in these vulgar days, commonly called the aviation bug.

Later on Harding acquired a monoplane of his own and flew at Ambérieu, near Lyon, but found that there was no money in flying and returned to his motor business. And Aviation saw him no more. Years afterwards one met him in a 'bus in Piccadilly looking prosperous. One hopes that the World is still using him well, for one owes him much.

The Early English Trade.

The reports of that first Aero Show appeared in *The Autocar* of Jan. 2 and Jan. 9, 1909. And one's first efforts in aeronautical writing so pleased Walter Staner that thereafter one was detailed to look after aeronautical affairs for *The Autocar*.

The only people in England who had got off the ground at that time were Mr. A. V. Roe and the late Mr. S. F. Cody, both of whom had done some short hops in 1908. But the Short Brothers had started on aeroplane work in their balloon factory which was situated in the railway arches under Battersea Park Station alongside the Dogs' Home. And another couple of arches were occupied by Mr. Howard Wright who, with Mr. W. O. Manning as his technical assistant, had built a hoped-to-be flying machine for, and to the designs of, an Italian inventor, one believes it was Signor Caproni, and were building quite a reasonable attempt at a flying machine of their own.

At the same period the late Mr. José Weiss had built man-carrying gliders at Amberley, which gliders were actually being flown by Mr. Gordon England and Mr. Leaske. And Mr. Handley Page had also begun to build aircraft of a sort.

Naturally one made the acquaintance of all of them. And from them one learned just about as much as there was to know about aeronautics in those days. Happily there were no mathematics about aircraft design then, or one could not make such a sweeping statement.

The boom in aviation spread to England and the number of experimenters with aircraft increased rapidly. The Aero Club acquired a flying ground at Leysdown on the extreme East of the Isle of Sheppey and there Short Brothers set up the first real aircraft factory in this country. The band of experimenters there included the Honourable Charles Rolls, Mr. Frank McClean, Mr. J. T. C. Moore-Brabazon and the brothers Grace.

Iliffe and Sons Ltd., encouraged by the growing interest in flying—and incidentally influenced by the fact that quite a number of unbelieving motorists wrote protesting against such foolish things as flying machines occupying pages and pages of *The Autocar*—published on May 25, 1909, the first issue of *The Aero*, a penny weekly with a blue cover and a joyous interior. The proprietors paid one the compliment of making one the joint Editor along with Wilfrid Aston, who is still well known as a writer on, and a human encyclopedia of, everything to do with terrestrial motoring.

The Aero continued its weekly career until March, 1911, when the proprietors decided that a penny weekly aviation paper was not a commercial proposition. So they turned it into a high-class monthly magazine, which endured for another year or so and then expired gracefully.

The First Real Flying in England.

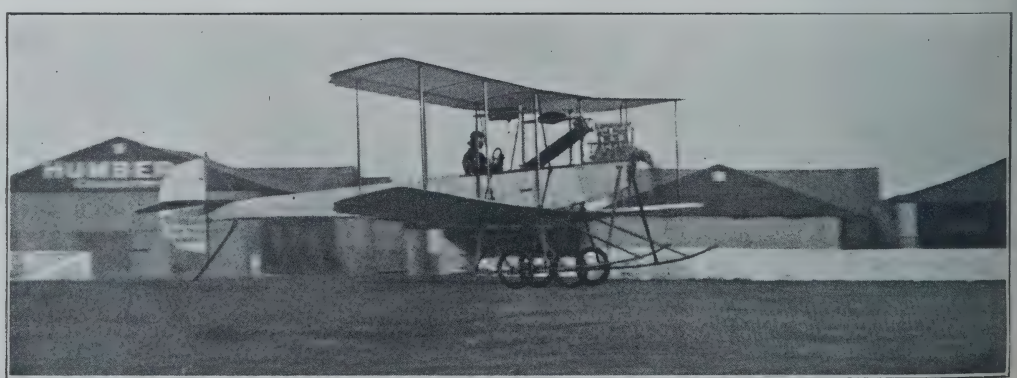
Mr. Cody made his first considerable flight on May 14, 1909. It lasted for 1,200 yards.

An enormous impetus to public interest was given by Louis Blériot's successful crossing of the Channel by air in the early morning of Sunday, July 25. It is worth while noting here for the benefit of light aeroplane enthusiasts, that he used a 25 h.p. Anzani engine and that the speed of the machine was about 35 miles an hour.

And, of course, all the enthusiasts of Aviation forthwith proclaimed that England was no longer an island, though none of them put it so well as did Mr. Baldwin when he said that "the island history of England ended" when Blériot crossed the Channel by air.

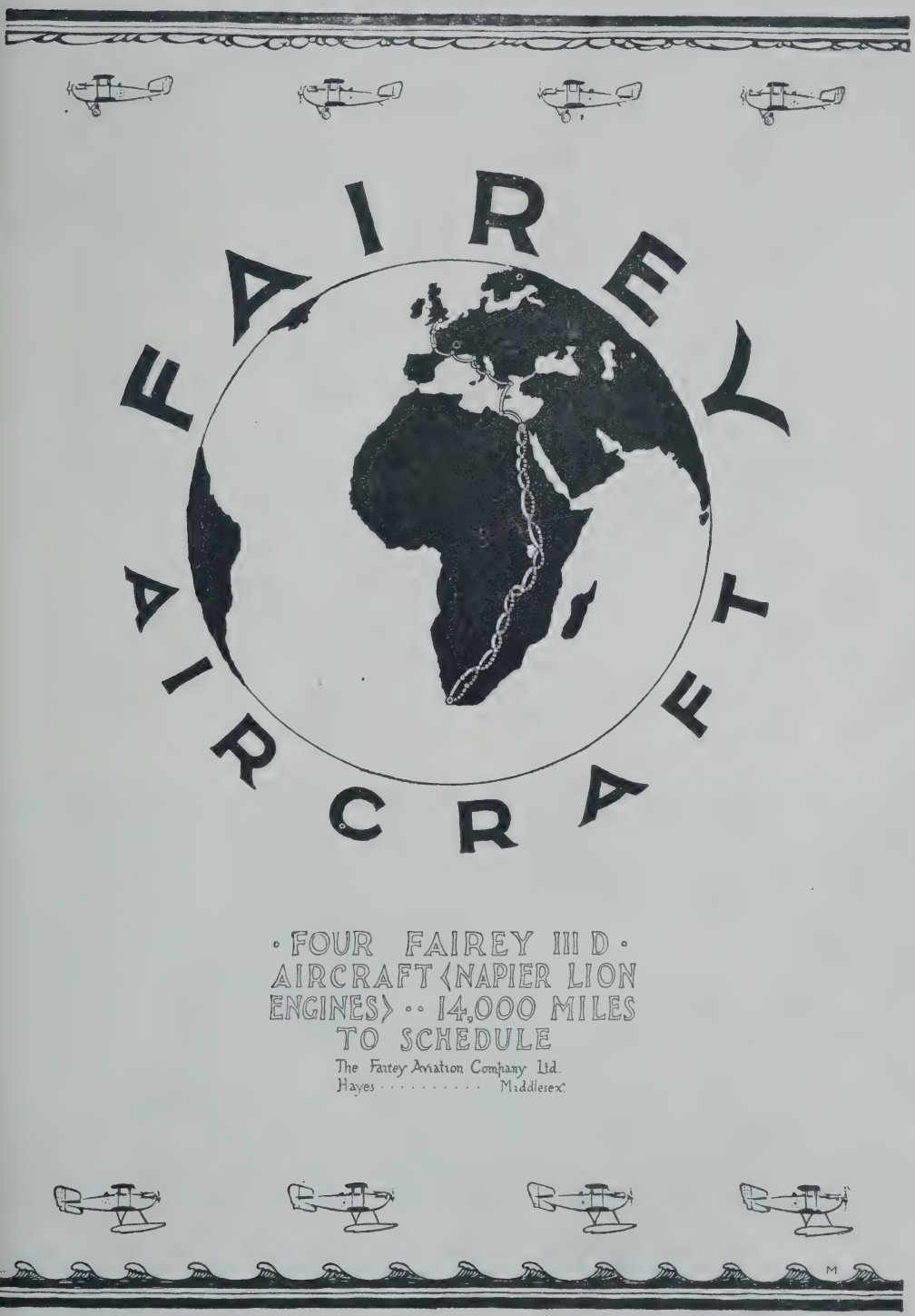
Thereafter there was a good deal of hopping about in England, but the first real flying to be seen in public was at Doncaster and Blackpool in October. These meetings were organised purely as money-making concerns by hard-headed Lancashiremen and Yorkshiremen. The Blackpool Meeting received the official blessing of the Aero Club, not then Royal, and so the Doncaster Meeting was regarded as being somewhat illegal. Consequently the Blackpool Meeting is generally regarded as the first official flying meeting in England, although it started on October 18 and the Doncaster Meeting started on October 15.

At both these Meetings the actual flyers were all French, and the only Englishman who really made any attempt to



FIFTEEN YEARS AGO.—The First Avro Biplane, with 35 h.p. Green engine, flying at Brooklands early in 1911.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.


FAIREY
AIRCRAFT
·FOUR FAIREY III D·
AIRCRAFT (NAPIER LION
ENGINES) ·· 14,000 MILES
TO SCHEDULE
The Fairey Aviation Company Ltd.
Hayes Middlesex

get off the ground was Mr. A. V. Roe, who on a triplane called The Bullseye, the wings of which were covered with paper instead of fabric, made some quite long jumps on Oct. 19.

The organisers of these Meetings were actually inspired by the huge success of the World's first real Aviation Meeting which took place at Reims in the last weeks of August at which the first Gordon Bennett Cup was won by our old friend Glenn Curtiss, the founder of what became later the great Curtiss aircraft firm in America. The other star performers were Henri Farman, Louis Blériot, and a young Frenchman named Paulhan, who afterwards became World-famous.

On Oct. 30, 1909, Mr. Moore-Brabazon won the £1,000 prize offered by *The Daily Mail* for the first flight of a mile over a closed circuit on an all-British machine. His machine was a Short biplane designed rather on the lines of a Wright, that is to say on the tail-first principle, and was driven by one of the very first Green engines.

Londoners had their first chance of seeing flying when Mr. G. Holt Thomas brought M. Paulhan from Blackpool to fly over the track at Brooklands. On Nov. 2 he flew about over Brooklands for 2 hours 48 minutes, thus putting up the first British Duration Record. Thereafter Major Lindsay Lloyd, the Manager of the Brooklands Automobile Racing Club, decided to level the area inside the track for use as an aerodrome. And from that dates the aeronautical history of Brooklands.

The Progress of 1910.

In 1910 flying really began to develop seriously. The Aero Show was held at Olympia in March and among the exhibitors whose names are familiar to-day we find the British and Colonial Aeroplane Company Ltd. (now World-famous as the Bristol Aeroplane Company), George and Jobbling (the Mr. George of which is an active member of the Newcastle-upon-Tyne Aero Club), Handley Page Ltd. (still very much to the fore), A. V. Roe and Company (as much up-to-date to-day as ever with their new Avenger, not to mention the Ava and the Auto-Giro), Short Brothers (who are keeping in front with metal aeroplanes and flying-boats with metal hulls), and Geoffrey de Havilland, who exhibited an aero-engine on the Handley Page stand.

In April, 1910, the Aéro Club, and with it Short Brothers' factory and all the accompanying experimental machines, moved from Leysdown to what is now the R.A.F. Aerodrome at Sheppey. This land had been bought by Mr. Frank McClean and presented for the use of the Royal Aero Club, subject only to a ground rent of 1s. per annum. One remembers very well going down on Good Friday, 1910, and watching Charles Rolls and Mr. Moore-Brabazon flying in quite a gusty wind.

Early in 1910 Brooklands also began to be famous as an aerodrome. The earliest experimenters there were Mr. Charlie Lane, well known as a driver of racing cars, the late Mr. H. J. D. Astley, commonly known as Otto, and a Mr. Neale, with whom as pupils were one Howard-Flanders, now Secretary of the Institution of Aeronautical Engineers, and a particularly nice lad named Freddy Raynham.

After these pioneers came Mr. Claude Grahame-White, who had already learnt to fly in France, and the British and Colonial Aeroplane Co. Ltd., who even then were always called the Bristol Company, and by May the population included Howard Wright, the Hon. Alan Boyle, Graham Gilmour, the brothers Petre, Martin and Handasyde, and A. V. Roe. There were then 18 sheds occupied. And soon afterwards Mr. T. O. M. Sopwith joined the party.

The Bristol Company deserves a particular place in history because it was the first firm to be formed in Great Britain purely as a commercial proposition to manufacture aeroplanes. All the previous firms were rather experimenters than producers. But Sir George White, who was then the Tramway King of Great Britain, saw the possibilities of air transport, and started the commercial manufacture of aeroplanes. He did a great service to the Nation.

There was quite an epidemic of aviation in England during 1910.

The first event of importance was the winning by M. Louis Paulhan of *The Daily Mail* £10,000 prize for a flight from London to Manchester. After two unsuccessful attempts by Mr. Grahame-White, M. Paulhan, who was again instigated and chaperoned by Mr. Holt Thomas, left Hendon at 5.30 p.m. on April 27, stopped the night at Lichfield and reached Burnage, near Manchester, at 5.32 a.m. on April 28.

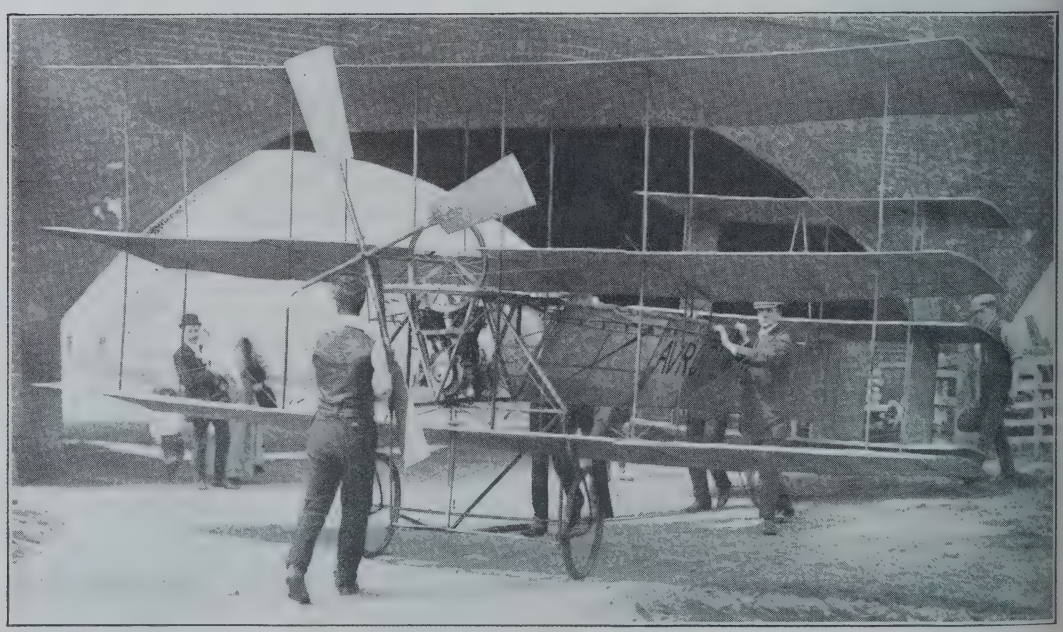
The place from which he started was a field at the end of Colindale Avenue, Hendon. From that field developed the great Hendon Aerodrome, at which one hopes all readers of this paper will be present this very week. And the little shed on the left of the Aerodrome gate, which is now the office of the Skywriting Company, is constructed on the spot, and, one believes, partly of the original material of the shed in which M. Paulhan's Farman was housed before he started.

Our Early Meetings.

The first Aviation Meeting at which British pilots really flew took place at Wolverhampton at the end of June, 1910, the pilots being Messrs. Cecil Grace, Claude Grahame-White, Lancelot Gibbs, James Radley, the Honourable Alan Boyle, Capt A. A. Rawlinson, G. B. Cockburn and George Barnes.

This was followed by the Bournemouth Meeting, which began on July 11. It was darkened by the death of the Honourable Charles Rolls on the second day of the Meeting owing to the tail elevator which had been added to his Wright biplane collapsing in the air.

The pilots who flew at this Meeting included the Honour-



SIXTEEN YEARS AGO.—Mr. A. V. Roe and his triplane in the railway arches on Lee Marshes.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.

ADVANCED FLYING INSTRUCTION.

The "Bristol"

629.105 AEE Engineering Library

ADVANCED TRAINING MACHINE,

a modern aircraft fitted with the most reliable type of modern air-cooled engine (the "Bristol" Jupiter) provides the best means for instruction in advanced flying in order to secure efficiency for piloting the latest military types.

The efficient oleo undercarriage, the special strengthened tail-skid and other features, all combine to give exceptional strength to the machine and to ensure long service.



THE BRISTOL AEROPLANE COMPANY, LIMITED,
FILTON — BRISTOL.

Telegrams:—Aviation, Bristol.
Telephone:—3906 Bristol.
Flying School:—Filton Aerodrome.


TYPES
of
METAL
AIRCRAFT
CONSTRUCTED
BY
SHORT
BROS.,
(ROCHESTER & BEDFORD) LTD.
ROCHESTER.

SHORT BROS. LTD.

(ROCHESTER AND BEDFORD)

See opposite page

THE ONLY FIRM in GREAT BRITAIN

who can place at your disposal the results of

7 YEARS'

practical experience in

LIGHT ALLOY ALL-METAL AIRCRAFT CONSTRUCTION.

EXPERIENCE TELLS

It must be bought—let us save you unnecessary expense.

THE ORIGINAL PIONEERS OF ALL-METAL BOAT CONSTRUCTION IN GT. BRITAIN.

able Charles Rolls, Claude Grahame-White, Armstrong Drexel, James Radley, Lancelot Gibbs, Christaens, Captain Bertram Dickson, Robert Loraine, Leon Morane, Cecil Grace, Louis Wagner, Charles Audemars, J. Colmore, the Honourable Alan Boyle, Alec Ogilvie, George Barnes and W. F. McArdle. Messrs. J. T. C. Moore-Brabazon and S. F. Cody were also there, but suffered so much from engine trouble that their machines never flew.

Just after the Meeting Mr. Robert Loraine flew across to the Isle of Wight and so was the first aviator to reach that delectable land.

Blackpool held its second Meeting in August and collected quite a number of foreign as well as British aviators. This was followed by the first Meeting in Scotland, which was held at Lanark during the first week in August.

It was here that one had one's first flight, and incidentally the first crash in Scotland, when competing (as a passenger *bien entendu*) in the weight-carrying competition with Captain Bertram Dickson on a Farman biplane. His mechanic had weighted the machine with half a dozen *rolls* of lead weighing several stone apiece, instead of with the same number of *stones* of lead. We staggered over the edge of the aerodrome, sank into the Valley of the Clyde, and sat down in a ditch where we abolished our undercarriage and a couple of wings.

By this time other aerodromes were growing up in England. Messrs. Drexel and McArdle had a flying school at Bournemouth, Mr. G. B. Cockburn and Captain Fulton, R.A., had a couple of sheds at Larkhill, on Salisbury Plain, whither the Bristol Company migrated very soon afterwards, and Mr. Horatio Barber settled there with his quaintly-designed but extremely well-built Valkyrie tail-first monoplane.

Experiments were also going on at Farnbridge where Mr. Pemberton Billing had started an aerodrome nearly two years earlier.

Ireland held its first meeting at the end of August on the Leopardstown racecourse near Dublin.

Mr. Robert Loraine distinguished himself on Sept. 11 by flying across the Irish Channel on a Farman box-kite. His engine let him down just short of Howth Head, so close to the shore that he was able to swim to the lighthouse. Therefore although he did not land on Irish soil he was well inside territorial waters and can fairly claim to be the first to have crossed the Irish Channel. With curious appositeness he appeared in Town three days later in a play called "The Man from the Sea."

The Hendon Aerodrome and Other Events.

During September the London Aerodrome at Hendon had actually come into being. The original inhabitants were the Aeronautical Syndicate, which was Mr. Horatio Barber and his Valkyrie monoplanes, the Blériot firm run by M. Chéreau, now of the A.N.E.C., and Messrs. Everitt and Edgcumb, who still exist close to the Aerodrome as manufacturers of electrical gadgets.

There is interest in noting that one of the first pupils of the Blériot School was Mr. James Weir, now Air Commodore, R.A.F. Reserve.

Mr. Grahame-White acquired the lease of the land and placed in charge of the development of the aerodrome one Richard T. Gates, who in three years made Hendon one of the show places of the World. He is the only man in this country who has ever known how to run an aerodrome and how to make flying a popular attraction.

In September Captain Bertram Dickson on a Bristol monoplane took a hand in Army Manœuvres on Salisbury Plain, this being the first time that aircraft had co-operated with the Army in this country, though in France aeroplanes had been used by the Army for some considerable time.

The French held their second Aero Show in October, 1910, and quite a number of aeroplanes there had actually flown.

On Oct. 9 Mr. Claude Grahame-White on a Blériot machine won the second contest for the Gordon-Bennett Cup at Beaumont Park, New York, thus for the first and only time giving this country possession of the classic trophy.

Late in the year the Bristol Company inspired by Sir George White, a worthy successor to the old Bristol Merchant Venturers, sent a mission to Australia and New Zealand under Mr. Sidney Smith accompanied by Mr. J. J. Hammond as pilot and another mission to India under the late Mr. Farnall Thurstan, with Mr. Henry Jullerot as pilot. This was the first British effort to get aircraft business overseas.

About the last event of the year was Mr. T. O. M. Sopwith's very fine flight on Dec. 18 from Eastchurch to Thirlemont in Belgium on a Howard Wright biplane with an E.N.V. engine. The distance was 177 miles and took 3½ hours. This flight won for Mr. Sopwith the de Forest Prize of £4,000 for the longest distance flown from England to anywhere else without a stop.

The Genesis of "The Aeroplane."

The year 1911 may safely be marked as the real beginning of the aviation boom in this country, and The Aeroplane newspaper was started just in time to record the great events.

The proprietors of *The Aero* decided during the early part of the year that the time had not yet come when a penny weekly aviation paper could be regarded as a commercial proposition. Therefore, after reporting the second British Aero Show at Olympia in its issue of Mar. 22, 1911, *The Aero* ceased to exist as a weekly paper and became a monthly magazine.

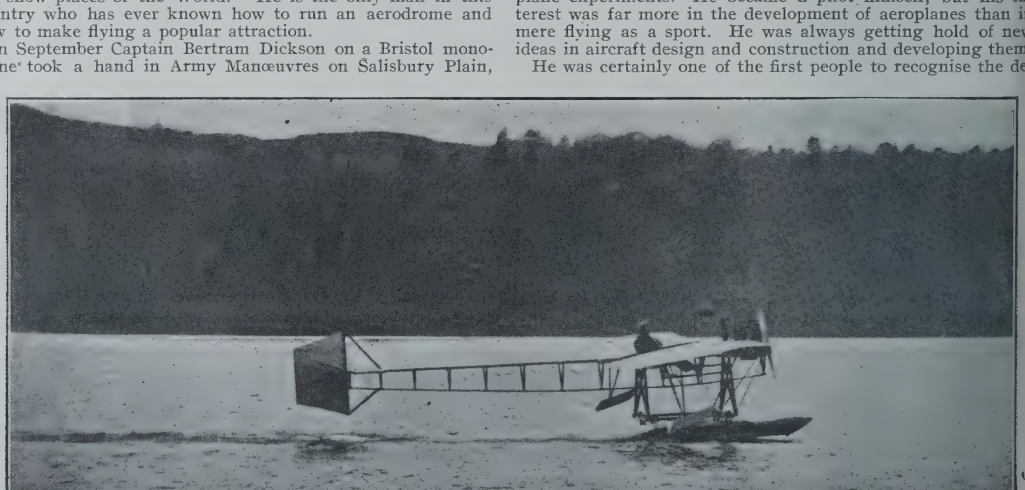
The old *Aero* was immensely popular among the people who flew. Wilfred Aston's pictures were, within their more limited area, as famous as are Leonard Bridgman's to-day, and Aston had a very pretty wit in his writings.

For oneself one did one's best to make the paper as lively as possible. The exuberance of one's comparative youth, at any rate as a writer, was to a certain extent restrained by the superior age and wisdom of Walter Staner, but one was allowed to give vent to one's personal opinions, and perhaps prejudices, in the form of letters to the paper which were signed by the pseudonym of "Aero-Amateur." These various extremely uneditorial opinions produced quite a lot of controversy, and in consequence the correspondence columns of the old *Aero* were seldom dull.

In those days there was not so much doing in aviation as there is now, and consequently there was room for correspondence. One was not faced as one is to-day with the continual problem of squeezing forty pages of reading matter into fourteen or less. Anyhow, "Aero-Amateur" became rather a well-known person and collected quite a goodly stock of enemies as well as of some few friends.

Towards the end of 1910 one of the best-known and best-liked members of the aeronautical colony at Brooklands was a Mr. E. V. Sassoon, son of Sir Edward Sassoon, one of the members of the great firm of that name. Ellice Sassoon during 1910-11 spent tens of thousands of pounds on aeroplane experiments. He became a pilot himself, but his interest was far more in the development of aeroplanes than in mere flying as a sport. He was always getting hold of new ideas in aircraft design and construction and developing them.

He was certainly one of the first people to recognise the de-



FIFTEEN YEARS AGO.—The Gnosspelius Monoplane on Windermere. This was the first aeroplane to get off water in Great Britain.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.

irability of steel construction, and he spent quite a good eal of money in financing the experiments of, and taking out atents for, an inventor named Mayrow who had some inenious idea for using strip steel in aircraft work. And one elieves that the Mayrow patents are now the property of ie Steel Wing Company Ltd. Therefore to Ellice Sassoon ust belong a great deal of the credit for being the pioneer f our steel aircraft of to-day and the future.

The Aero Club in those days was situated at 166, Piccadilly. ne day in the Club one was talking to Mr. Sassoon about ings in general when he remarked what a pity it was that ie weekly *Aero* had gone out of existence, and one stated iat in one's own opinion it was quite possible, with strict ttention to economy, to run a penny aviation weekly paper ithout any considerable loss until such time as the Aircraft rade should grow into a real business.

The idea interested him and he asked one to produce some gures in support of that opinion. In the course of a few ays one had collected the necessary figures, and showed them Mr. Sassoon.

With that quickness of decision which is characteristic of im he made up his mind at once that we should start an viation paper in partnership. His proposition was of the ost generous kind. It was in effect that he should find the oney and hold 51 per cent. of the shares while one received ie other 49 per cent. of the shares for one's experience. he result was that The Aeroplane and General Publishing o. Ltd. was duly registered and arrangements were made or the paper to be printed and published by the Black and Vhite Publishing Company.

The First Issue of "The Aeroplane."

The first issue, as already mentioned, appeared on June 8, 911. Its pages were smaller in size than those of the modern EROPLANE and there were twenty-four pages of it, including ie cover.

In one's opening remarks one claimed that there was room or "a thoroughly intelligent weekly paper dealing with viation in all its phases, a paper which is unconnected with ny club or society, and so can give vent freely to criticism the doings of anybody and everybody, and a paper the prorietors and conductors of which are devoted solely to the nterests of aviation, and are therefore untrammelled by the nfluence of other sports or trades."

One believes that one can claim after fifteen years that The EROPLANE has justified those words. A great many people ave resented the criticisms which have appeared in The EROPLANE during that time. But in the end one's criticisms ave invariably been justified.

And if one has made enemies one can at any rate say that one of them has been a person whom one would care to ave as a friend. At the same time one can claim that many f one's best friends have become so through their taking riticism in the spirit in which it was meant, namely for the ood of the progress of Aviation.

In the course of those opening remarks one said "Attempts ave been, and will be again, made to plant obsolete and angerous machines on the British Government, and it will e the particular task of The Aeroplane to expose the weakesses of such machines and the folly of buying them. In oing so The Aeroplane will doubtless make enemies, and ossibly lose an advertiser or two, but a whole-hearted enemy often a valuable asset, and surely the saving of the taxayers' money and the lives of officer aviators should be orth the loss of some advertisements."

This reads rather like a prophecy, but like all prophecies it was merely the result of knowing one's facts. On several occasions in the past fifteen years The Aeroplane has told the truth to its own cost, but certainly to the ultimate advantage of the Flying Services.

The front page picture of that first issue of The Aeroplane showed Mr. Claude Grahame-White on a Farman box-kite diving into the Hendon Aerodrome during a Demonstration which had just been given to various and sundry political folk. This is singularly apposite in view of the fact that next week's issue of The Aeroplane, the first of the Thirty-First Volume, will illustrate the R.A.F. Display at Hendon, and the same old sheds on the right of the gate leading from Colindale Avenue into the Aerodrome, over which Mr. Grahame-White is seen gliding, constantly appear in photographs of the R.A.F. Display because they happen to offer the best line into the Aerodrome for a short landing.

The Early Advertisers.

The list of advertisers in that issue is quite interesting. The first is the Green Engine Company, now making motor-boat engines of high power, but in those early days the only British manufacturers of a successful aero engine. The Green engine held practically all British records at one time or another, and, as one told Mr. Fred May only a few days ago, if only it had had a longer nose to leave room between the airscrew and the leading cylinder for adequate cowling it might have occupied a position such as the Puma and Lion and Eagle hold to-day.

The second advertiser was the Sanders Aeroplane Company which advertised "The Sanders Aerial Cruiser, fitted with Sanders Patent Aerial Gun for Naval and Military Purposes. Machines built to rise from or alight on water." This firm had nothing to do with the famous Mr. Sam Saunders of Cowes. It was run by an officer of the Mercantile Marine who gave up aviation a year or so later. He was a brother of Miss Ivy Sanders, later to acquire fame in connection with *The Daily Mail*.

Next came The Universal Aviation Company Ltd., of 166, Piccadilly, advertising "the Birdling Monoplane and the Birdling Biplane, Tuition, Exhibition Flights, Tools and Accessories." This firm was really the property of Mr. E. V. Sassoon, and the General Manager was Mr. R. O. Cary, later well-known as a Director of the Sopwith Aviation Company. It was through the Universal Aviation Company that Mr. Sassoon operated his various practical experiments in aviation. And, as so many experiments in all walks of life come to a sad end, thus giving the experience which leads to success, the firm was generally known by the humorists at Brooklands as the Universal Destruction Company.

Next came E. T. Willows, Ltd., "Aeronautical Engineers, Makers of Balloons and Dirigibles of All Kinds." At the top is a picture of the airship *City of Cardiff*. The story of Mr. Willows' efforts was told a week or so ago in this paper.

Next comes Howard T. Wright, advertising "Eight Types Monoplanes from 40 to 80 miles per hour, Biplanes from 36 to 50 miles per hour. Winner of the De Forest Prize." Mr. Howard Wright built aeroplanes until 1912, when he became Manager for the Coventry Ordnance Works. Thereafter he went to J. S. White of Cowes, where he built some very interesting seaplanes before the War. They had floats which were really the forerunners of the American racing floats. During the War he built a vast quantity of seaplanes and after the War retired from aviation except as a willing worker at flying meetings.



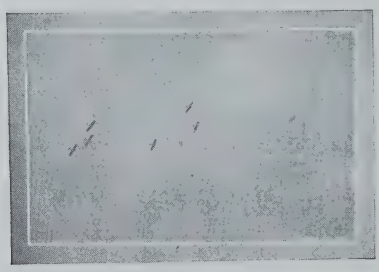
FIFTEEN YEARS AGO.—Two of the Steel-Tube Monoplanes built by Vickers Ltd., at Brooklands in 1911.

DO NOT FORGET THE R.A.F. DISPLAY ON SATURDAY.

VICKERS
LIMITED

THE VICKERS "VIRGINIA" LONG DISTANCE BOMBER
(Twin 450 h.p. Napier "Lion" Engines)





Extract from :–

OFFICIAL REPORT.

Parliamentary Debates

HOUSE OF COMMONS.

Vol. 192. No. 18. Thursday, 25th February, 1926.

"The SECRETARY of STATE for AIR (Sir Samuel Hoare): Last year the Air Force carried out a series of remarkable long-distance flights in the neighbourhood of the British Isles. Here are one or two of them. On 24th September, five Vickers' Virginias, from No. 9 Bombing Squadron, flew from Manston, in Kent, to Leuchars, the most northerly air station in the British Isles, and back to Manston in a day, a distance of 870 miles. A second flight was undertaken by eight Vickers' Virginias from Worthy Down, in Hampshire, again to Leuchars, on 3rd September. Although the weather was very bad three of the machines flew from Hampshire to Edinburgh and back without landing. Lieut.-Commander BURNEY: With full service load. . . .

Sir S. HOARE: Yes, with full service load, and as an ordinary service exercise, and not in any way as a stunt. They flew a distance, of about 800 miles, spending as much as 12½ hours continuously in the air





LENGTH OVERALL ... 50'-7"
HEIGHT OVERALL ... 17'-3"
SPAN (SPREAD) .. 86'-6"
SPAN (FOLDED) .. 44'-3"

Works:-
WEYBRIDGE,
SURREY.

APPROX. FULL SPEED .. 108 M.P.H.
MINIMUM SPEED 46 M.P.H.
UNLADEN WEIGHT ... 9,900 LBS.
USEFUL LOAD 6,850 LBS.
(Fuel, Crew and Armament).
TOTAL LADEN WEIGHT..16,750 LBS.

All Enquiries to:–

Aviation Department,
VICKERS HOUSE, BROADWAY, LONDON, S.W.1.

Telephone:
VICTORIA 6900.

Telegrams:
VICKERS, SOWEST, LONDON

VISIT THE ROYAL AIR FORCE
DISPLAY AT HENDON,
3rd JULY, 1926.

VICKERS LIMITED



ACCESSORIES
AND
EQUIPMENT
FOR AIRCRAFT.

"Scarff" Ring Gun Mountings.

Petrol and Oil Accessories
(Cocks, Filters, Flow Indicators, Valves, Pumps, &c.).

"Davis" Navigation Lamps.

Vickers' Oleo-Pneumatic Undercarriages.

Stream-line Wires and Tierods.

Pyrotechnic Signals and Signal Guns,
etc.

All Enquiries to:
Aviation Department,
VICKERS HOUSE, BROADWAY,
LONDON, S.W.1.

Telephone: VICTORIA 6900.
Telegrams: "VICKERS, SOWEST, LONDON."
Works: WEYBRIDGE, SURREY.

VISIT THE ROYAL AIR FORCE
DISPLAY AT HENDON,
3rd JULY, 1926.

Next comes a whole-page advertisement of Antoinette Aeroplanes. These machines were never built in England and the advertisement was there merely because the famous Hubert Latham had been flying at Brooklands the previous week and the French firm desired to plant the British agency somewhere.

The next advertiser is The Aeronautical Syndicate Ltd., of Colindale Avenue, West Hendon, N.W., advertising the new type B. Valkyrie Monoplane. Mr. Horatio Barber, the proprietor of the business, closed down just before the War in 1914, and became an officer of the R.F.C., in which he did valuable work as an instructor. He also wrote about the best books on flying ever published up to that date. He is now engaged on important insurance work in the United States.

The next advertisement is a quarter-page advertisement of the Avro Biplane, "Britain's Most Successful Aeroplane. Complete with 30 h.p. Green engine for Passenger or Cross-Country, £600." That Avro biplane of 1911 with a 30 h.p. Green engine would very well stand comparison on performance with any light aeroplane of to-day. It certainly was one of the best little machines ever produced.

The back pages of the cover, as it is to-day, was occupied by "Bristol Aeroplanes As Supplied to H.M. War Office." It is interesting to note in this advertisement "The Company's Flying Schools, at Salisbury Plain, Brooklands and Eastchurch are the finest in Great Britain. Permanent Staff of 15 Certificated Pilots."

There is not a firm in Great Britain that can say as much for itself to-day. And it must be remembered that the Bristol Schools were in competition with various other schools at Brooklands and at Hendon, not to mention Mr. W. H. Ewen's School at Lanark, which was advertised in a small advertisement in that same issue of The Aeroplane.

Early Editorials.

There are one or two rather interesting points about the editorial contents of that first issue.

There is an account of an accident which Mr. Sopwith had with a tandem two-seater Blériot in America.

There is an account of a flight made by Lord Northcliffe with Mr. Maurice Farman, in which a newspaper report announces as something wonderful the fact that the motor used was fitted with silencers. And The Aeroplane, according to subsequent custom, points out that the Howard Wright monoplane at Brooklands had been fitted with proper silencers ever so long before.

The paragraph adds "There is no doubt that for military purposes a decently silenced engine would be an immense advantage." And we are still without a decently silenced engine.

Further on there is a plea for the production of an air speedometer. We still seem to be waiting for one which is reliable for any great length of time.

There is a description of alterations at Hendon, showing that at that date Hendon was already a show place where anybody might go and see first-class flying. Which they cannot do to-day.

The "Week's Work" included descriptions of flying training at Brooklands and Hendon, each with a number of different schools putting up hours in the air which are probably not equalled in these days anywhere outside of the R.A.F.'s Flying Training Stations.

There is a little report of Gordon Bennett racers in process of construction which reads very like forecasts of the Schneider Trophy machines in The Aeroplane a few months ago.

Also there is a description of a flight at Cambridge by Mr. Hubert Latham showing that even in those days people were trying to stir up enthusiasm for flying at the Universities. And the enthusiasm is not very much greater now than it was then.

A short article on No. 2 Company of the Air Battalion, R.E., recalls the fact that there were only six military aviators at the time and the statement is made that sixty was nearer the number required to be of service even at the beginning. Three years and a couple of months later when war actually broke out we still had not sixty pilots.

The same article pointed out that none of the machines were capable of doing more than forty miles an hour and that the authorities who sat in armchairs in the War Office expected their pilots to go out on manœuvres under conditions possible only for a sixty-mile-an-hour machine. Things have really not altered much to-day. The R.A.F. only has 3,000 officers, a number which is entirely inadequate even at the start of a first-class war, and the speed of our aeroplanes to-day, thanks to the interference of Air Ministry experts, is in about the same relation to that of the machines of more intelligently equipped air forces as forty to sixty was fifteen years ago.

There is an article with a general arrangement drawing of the Antoinette monoplane, one of the most beautiful aeroplanes ever produced. Its constructional details were quaint, acording to modern ideas, but in the matter of reduced frontal area, it could give points to most modern aeroplanes, and the fact that it did sixty miles an hour with a bare sixty horse power, although it weighed 1,760 lbs. empty, shows that it was not far below modern ideas in efficiency.

The second issue of The Aeroplane contained scale drawings of the first Avro biplane with 35 h.p. Green engine, so it may be seen that our pioneer aviator was well to the fore in those days.

Progress in 1911.

The sporting events of 1911 were numerous and very important. On June 18 an air race started from Paris which went by way of Reims, Liège, Utrecht, Brussels, Calais and Dover to Brighton and London, and back to Paris by way of Brighton, Dover, Calais and Amiens. There were twenty-two starters, a number which would be regarded as quite satisfactory to-day.

The third issue of The Aeroplane, dated June 29, indicated the beginning of Naval Aviation, for it contained two photographs of Lieutenant Longmore, R.N. (now Air Commodore) flying a Short biplane at Brooklands, whither he had flown all the way from Eastchurch.

Our friends the Short Brothers were already the foundation on which the Naval Air Service was being built. Mr. Frank McClean had already loaned two Short box-kites to the Navy and the Aero Club had given the use of the Eastchurch Aerodrome to the naval aviators free of charge. Mr. G. B. Cockburn, who had been the sole British representative at the World's first Aviation Meeting at Reims in 1909, had volunteered to give his services also free of charge as instructor.

The first course of training had begun on Mar. 1, 1911, the pupils being three Naval officers, Lieutenants C. R. Samson, R. Gregory and A. R. Longmore, R.N., and an officer of the Marines, Captain E. L. Gerrard, R.M.L.I. Thus it may be seen that the Navy's aviation began in 1911 purely as a matter of personal charity.

And as usual the Silent Service before very long began to get all the publicity, while the Army, paying for everything itself, attracted no public attention whatever except a certain amount of criticism in the House of Commons.

Shortly after the European circuit race the only Gordon-



FIFTEEN YEARS AGO.—About the first aerial photograph taken in England. Windermere from Mr. Wakefield's biplane (seen on right) piloted by Mr. Stanley Adams.

Bennett Race ever held in England took place at Eastchurch on July 1. The previous year the second Gordon-Bennett Race had been won by Claude Grahame-White on a Blériot at Beaumont Park, New York. The race at Eastchurch was won by Charles Weymann, flying a Nieuport machine, for America. Thus America won the Cup by means of a Haitian (West Indian) pilot partly of French and partly of native blood with a German name and brought up in Paris and flying a French machine. How he happened to be of American nationality one does not know.

The only British competitor to complete the course was Mr. Alec Ogilvie, who flew a Baby Wright. The late Gustav Hamel was going to fly a Blériot with cut-down wings, but he crashed while making a practice flight before the race. In the account of the race in The Aeroplane a note is made to the effect that the machine was carrying something like 14 lbs. to the square foot of wing surface, which sounds modern.

An interesting machine in the race was a Baby Nieuport monoplane with a little two-cylinder horizontal engine which gave about 30 h.p. Weymann's speed over the course was something like 80 miles an hour and the Baby Nieuport was not a very great deal slower. So here again was a useful light aeroplane.

As usual, England was out of the race owing to lack of preparation. There is something very modern about the following quotation from the description of the race :—"Anyhow England got her desserts, for we have plenty of fine flyers if only someone would go the right way to work to provide machines for them. Where are all our monied sportsmen who find the money for English teams to go abroad for international athletic meetings, yacht races, polo matches and so forth?"

The Circuit of Britain.

The next great event was the Circuit of Britain, which started from Brooklands on July 22, the first stage being from Brooklands to Hendon. Seventeen competitors actually left Brooklands and there were several others who essayed to start but failed to get away, for Brooklands on that day, the hottest day one remembers, was like a boiling pot.

The course was by way of Harrogate, Newcastle, Edinburgh, Glasgow, Manchester, Bristol, Exeter, Shoreham, and Brooklands.

The race was won by Lieut. de Conneau, of the French Navy, who flew professionally as André Beaumont, on a Blériot, only about 1 hour and 10 minutes separating him from Jules Védrines on a Morane monoplane. The only two others to finish were James Valentine on a Deperdussin monoplane and S. F. Cody on his Flying Cathedral, as it was called.

It is interesting to note that The Aeroplane of Aug. 10 contained photographs of the first flights made in Australia on an Australian-built machine. The designer-constructor-pilot was Mr. J. R. Duigan of Mia Mia, who, though no longer flying, is still very much to the fore.

The same issue of The Aeroplane recalls the fact that on Aug. 2 Commander Schwann and Lieut. Boothby of the naval airship tender *Hermione* at Barrow made some trials with an Avro biplane fixed on two floats made of aluminium. And The Aeroplane asked why Naval officers should experiment at their own expense.

This was in fact the beginning of sea-going aviation. These two officers, now better known as Air Vice-Marshal Sir Oliver Swann, A.O.C. Middle East Area, and Commander Boothby, late R.N., of airship fame, were connected with the unfortunate naval airship No. 1, commonly known as the *Mayfly*. Commander Schwann's first effort on his Avro resulted in his getting off the water and falling in again without serious damage either to himself or the machine. Later it was flown by Mr. S. V. Sippe, who had just learned to fly at the Avro School. Subsequently Mr. Sippe became famous as one of the heroes of the Raid on the Zeppelin Sheds in 1914, and he is now in charge of Short Brothers' interests.

Another matter of great interest in The Aeroplane of Aug. 10 is a description with scale drawings of Vickers No. 1, a monoplane built entirely of steel tubing, wood being used only for the two skids and for the ribs of the main planes. The machines was built under license to the R.E.P. people in Paris, but it was actually designed by Mr. A. R. Low, now in charge of the Library at the Air Ministry. So here we see that the ideas of fifteen years ago were not so far behind.

Incidentally there is much interest in the fact that Mr. A. R. Low produced at about this period for the Vickers Company a set of thick wings for another monoplane of similar type which were not at all unlike the section used by Mr. Fokker in these days.

In September, 1911, what is generally regarded as the first Air Mail in the World was run. Actually it consisted in flying a few bags of letters from the Hendon Aerodrome to Windsor. There was no earthly object in sending them there. They might just as well have been sent to Tooting Common, but a certain number of people got advertisement out of it and one believed that philatelic fanciers placed some absurd value on the stamps and envelopes which travelled by it.

Almost the last issue of The Aeroplane of 1911, that of Dec. 21, contained the conditions of the Military Competition which was held in Aug., 1912. That really marks the beginning of serious military aviation and the first attempt on the part of the War Office to procure aircraft of serious military value.

The very last issue of the year contains a report of the Paris Aero Show in which sketches by Mr. Max Millar and photographs show ingenuity in streamlining and engine cowling quite worthy of the best brains of to-day in our modern efforts to get 300 m.p.hr.

The last month or so of 1911 produced the first really serious effort to build sea-going aircraft. The Short Brothers at Eastchurch turned out various experimental floats for use on aeroplanes. They put up a shed at Shellness on the extreme East of the Isle of Sheppey and from there Lieut. Longmore flew on several occasions to Sheerness Harbour, alighting in the harbour, going on board H.M.S. *Actæon*, which was the headquarters of the little naval detachment at Eastchurch, and afterwards returning to Shellness. The early machines were Short pusher biplanes, and a tractor biplane was produced by May, 1912.

Also by May, 1912, Commander Samson, Lieut. Longmore, Lieut. L'Estrange Malone and Lieut. Gregory had all flown off the decks of warships.

The rest of the Acts of our Aviators are they not written in the Books of The Aeroplane of the next fourteen years for all to read?



FOURTEEN YEARS AGO.—Mr. Sopwith at the controls of the 1912 Sopwith Biplane, with Mr. Fred Sigrist and Mr. Harry Hawker as passengers.



PROGRESS!

1902——1926

THE history of AVRO aeroplanes is almost synonymous with the history of aviation itself, for as far back as the year 1902 Mr. A. V. Roe was experimenting with model Gliders, and from that date steadily progressed until in 1907 he constructed his first full-sized man-lifting machine, and on June 8, 1908, accomplished his first flight in England, gaining the distinction of being the builder of the first man-carrying aeroplane in Great Britain.

Thus was founded the policy of Progress, which marks the activities of the firm of A. V. Roe & Co. Ltd., the pioneers of the world's best aircraft.

From these early beginnings, by steady progression, a wide variety of aircraft has been developed.

The wonderful record of AVRO machines during the Great War is well known. They were used on the various fronts for Scouting, Fighting and Bombing, and more flights have been made on them than on any other make of machine.

Since the war many new and successful types of AVRO machines have been designed and constructed. To-day a wide variety is available including aeroplanes and seaplanes for military and naval purposes, commercial machines with single or multiple engines, and, in fact, machines for practically every flying requirement, including the AVRO "GOSPORT" the most perfect training machine extant.

A few AVRO machines are illustrated on the opposite page. Special machines for special purposes can be designed.

1902-26—A quarter of a century of AVRO PROGRESS.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

CRISES IN THE CAREER OF "THE AEROPLANE."

During the latter part of 1911 THE AEROPLANE went through a serious crisis and very nearly expired. Mr. E. V. Sassoon was compelled by the needs of the great Sassoon business to give up all his aeronautical interests and devote himself entirely to the business of his firm, which meant among other things that he had to sacrifice his financial interest in THE AEROPLANE.

Up till the outbreak of War, 1914, Mr. Sassoon devoted himself strictly to business. He joined the R.N.A.S. when War began, and was crashed at Dover early in the War, and lamed for life. But with his usual energy he devoted himself to staff work in Paris as soon as he could move, and did valuable service. After the Armistice he rejoined his family and firm, and now, as Sir Victor Sassoon, having succeeded his father in the baronetcy, he is a Member of the Executive Council of India.

When Mr. Sassoon ceased his connection with the paper THE AEROPLANE had actually consumed about £600 of capital. The money had not been lost. Most of it was in fact owing to the paper from advertisers. And the little business was quite solvent. But fresh financial support had to be found.

This was ultimately put up by a Mr. Walton, a South American cattle king, who was interested in a strange biplane with variable camber which had been built at Brooklands by Mr. Harold Blackburn, now Wing Commander, R.A.F., for a firm called Walton and Edwards. The active member of this firm was Mr. Edwards of Morgan and Company, who then had the great motor depot in Bond Street now occupied by the Armstrong-Siddeley Company. Mr. Edwards induced Mr. Walton to guarantee an overdraft at the bank for a further £400, and that was about all the liquid capital THE AEROPLANE ever had.

A further complication occurred very early in 1912 when The Black and White Publishing Company went into liquidation. The situation in this case was saved by Mr. W. L. Wood of William Dawson and Sons Ltd., who arranged at very short notice for the paper to be printed by Bonner and Co. Ltd., of Rolls Passage, Chancery Lane.

For the remaining fourteen and a-half years of its existence THE AEROPLANE has been printed by Bonner and Co. Ltd. and published by William Dawson and Sons, and one can say definitely that no editor has ever had less trouble with his printers or his publishers. Mr. Bonner and Mr. Gilham, the directors of Bonner and Co. Ltd., and Mr. Gilmore, the Works Manager, could not have been more solicitous for the welfare of the paper if they themselves had been the proprietors of it.

One owes each and all of them a great debt of gratitude for their help. When they took over the paper their first issue consisted of twenty-four pages of small size with a circulation of somewhere about 2,000 copies. During the greatest period of interest in aircraft during and immediately after the War when labour was scarce and everything was most difficult Mr. Gilmore managed to produce unfailingly up to time week by week a ninety-page paper with a circulation of somewhere about 15,000 per week. He nearly killed himself in the process by sheer hard work. But he got the job done.

After some months of the Walton-Edwards régime Mr. Walton got tired of aviation and the financial arrangements of THE AEROPLANE were taken over by certain of the directors of Dawson and Sons. Here again THE AEROPLANE was singularly fortunate. Mr. Robert Bickersteth and Mr. Guy Abney, the two directors in question, became directors of The Aeroplane and General Publishing Company Ltd., and never for one moment have they objected to or interfered in any way with the editorial policy of the paper.

They have seen it through the thinnest of thin times during the post-War slump and they have managed the whole of the business and financial arrangements of the paper. Once or twice one has by sheer clumsiness, or by one of those unavoidable twists of phrase which are taken to mean what they did not mean, involved the paper in law actions. But never once have one's co-directors even reproached one on account of the consequent law costs. To them the readers of THE AEROPLANE owe the continued existence of the paper.

"THE AEROPLANE'S" STAFF.

When the paper started fifteen years ago the staff consisted of one P. K. Turner, afterwards an R.F.C. officer and now one believes a journalistic authority on wireless. And with him there was one typist. Subsequently we rose to the dignity of a juvenile assistant who was kind of combined office boy and junior typist, with, incidentally, considerable promise as an artist. His name was E. M. Rossiter, and he also subsequently became an R.A.F. officer.

Before the War when things in aviation began to improve one was joined by W. E. de B. Whittaker, who wrote some extremely long-sighted articles on military aviation. He left in order to join the late Gustav Hamel as his flying manager, at a salary which the poor little AEROPLANE could not possibly afford. But he has always remained a valued guide, philosopher and friend.

He was succeeded by W. H. Sayers, who then established himself as a technical writer. He left the staff on the outbreak of war and joined the R.N.A.S. and served right through to the very end of the War.

During the War one's only assistant was the late W. L. Wade, a young man of great promise and provedly unfit for war service in that he was turned down by the medical people on six occasions when he tried his best to join the Army. He died very soon after the end of the War during the influenza epidemic, worn out by the general strain of the period. Nobody in the Flying Services ever worked harder for the Flying Services than did Walter Wade, and his death deprived one of a most valued assistant and friend.

"THE AEROPLANE" OF TO-DAY.

As soon as possible after demobilisation had begun W. H. Sayers, by this time Captain, R.A.F., rejoined the staff of THE AEROPLANE, and has been in charge of technical matters ever since. The soundness of his judgment in such affairs is shown by the fact that although there have been so many inventions and innovations in the design and construction of aircraft and aero-engines in the past eight years THE AEROPLANE has not yet backed a technical wrong 'un.

Captain Sayers is certainly one of the pioneers of aviation, for he left a very good job as an electrical tramway engineer to became a mechanic at Brooklands on practically nothing a week. One first met him there somewhere about 1910 so that he has all the qualifications to pose as an authority on both ancient and modern aeronautics.

Major Whittaker also rejoined the staff soon afterwards, but left later on, to do still more valuable work in a much wider sphere of influence where his ability can do greater good to the Army—the object of his existence.

Mr. Bridgman came into THE AEROPLANE in April, 1919, having been an Observer, R.F.C. and R.A.F. One believes that one can claim for him that he is the best-known aeronautical artist in the World. One sees his drawings reproduced from THE AEROPLANE, frequently without acknowledg-



FIFTEEN YEARS AGO.—The Avro Biplane in 1911, with E.N.V. engine, showing the remarkable progress made in little over a year from the original Avro Biplane, built in 1910 and still flying in 1911.

ment, in newspapers of all nations. And his poster of the R.A.F. Display which pervades London and everywhere for miles round at the present moment has probably made him the most viewed artist of the moment.

The thousands who have admired his work may be interested to know that he draws left-handed, and has never had a drawing lesson in his life. In addition to his pictures Mr. Bridgman is responsible for practically all the foreign and technical news in The Aeroplane, and there can be very few people anywhere who have such an extensive and intimate knowledge of the aircraft and air services of all nations as he has.

Mr. Geoffrey Dorman joined the staff of The Aeroplane in April, 1920, and since then has made for himself a position in the aircraft community which is entirely his own. Primarily regarded as a humorist he has in fact proved to have a very distinct business instinct, and his knowledge of the internal politics of the Aircraft Industry has been of high value. It is quite in keeping with The Aeroplane's habit that he, being the one war pilot on the staff, should devote himself primarily to the commercial side of aviation. Mr. Dorman can also claim to be among the pioneers, for as a small boy at Tonbridge School he used to spend much of his holidays at the Hendon Aerodrome playing around and asking those searching questions which only the intensely interested school-boy can ask.

Also in keeping with The Aeroplane habit is the fact that all the R.A.F. news, official communiqués, and R.A.F. athletic affairs should be in charge of Mrs. McAlery, formerly, as Miss Scott-Holmes, an officer in the W.R.A.F., who, from a very early age, was as keenly interested in flying as any school-boy could be. Whether on matters of Service discipline or of Rugger form she is an equally severe and informed critic.

Miss Swancott, though the youngest member of the staff, is in fact the senior member, as she came to the paper in August, 1917, as a very small office girl. Since then besides making herself a competent stenographer she has become a kind of human index of everything that has ever appeared in The Aeroplane and those people who write asking for information about things which have happened in aeronautical history in the past can usually thank her for the fact that they get the information they want within a day or two instead of in a matter of weeks.

Miss Margaret Housley, whose initials "M.H." are about as well known to all who correspond with The Aeroplane as one's own "C. G. G.," joined the staff in September, 1920, having previously been in the drawing office of the Norman Thompson Flight Co., the pioneers of flying-boats in this country. Miss Housley has made for herself a position in the affairs of The Aeroplane which makes her as nearly indispensable as any person who is part of a human mechanism, such as is the staff of a newspaper, can be.

As one's personal secretary she has naturally acquired a peculiarly intimate knowledge of the Royal Air Force and the Aircraft Industry. And, though the Air Ministry's famous Secret List is an open book compared with her capacity for keeping to herself facts which ought to be kept secret, her extraordinary memory for events and names has made her a mine of general knowledge of Aviation which is always at the service of anybody who is in need of assistance. And as her chief object in life is to help other people she is one of the busiest of beings, and much more useful in the World than most of us are.

One owes a very deep debt of gratitude to the staff of The Aeroplane for the loyal way in which they have helped to keep the paper going through the thin times since the outbreak of peace.

The commercial manufacture of aircraft may be a paying proposition but certainly conducting an aircraft paper is not. Consequently everybody on the staff of The Aeroplane is hopelessly underpaid. The directors get no fees and the shareholders get no dividends, or at any rate have not had any for the past seven years. Consequently the staff has to live in hopes that some day there will be a boom in aviation so that we may all become profiteers, either in peace or war. But in the meantime poverty does not in any way affect the loyalty of the staff, nor its willingness to work. And for this readers of The Aeroplane owe them much thanks, for the paper could not be maintained at its present standard of excellence under any other conditions.

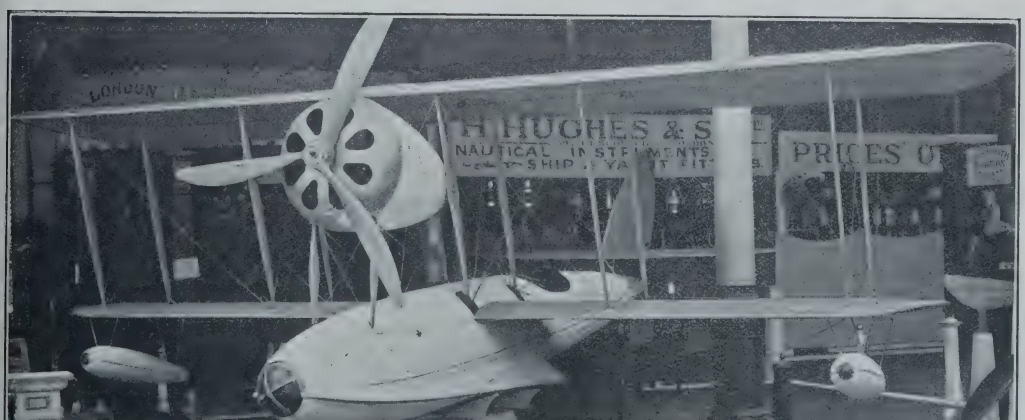
Purely Personal.

For oneself, one owes thanks to the readers of this paper for having remained faithful to it for so many years. Every week in the whole of those fifteen years one has inflicted one's personal opinions on the readers in the first article in the paper. Writing those articles has been a sheer joy, and all one can hope is that some of them may have given as much pleasure to read as they did to write, and that some may have been instructive. But the readers of The Aeroplane, quite a number of whom have read it from the first issue, certainly deserve to be congratulated on their feat of endurance in reading those 780 articles and still remaining faithful to The Aeroplane.

One gives fair warning that it is one's intention, barring accidents, to go on doing those articles every week, at least until the paper comes of age six years hence. Possibly some patriotic son of Japhet may have put an end to one's career before that time. Or perhaps the paper may have been suppressed for being too patriotic during the next war. But, barring such acts of God or the King's enemies, one hopes to do the complete twenty-one years of leader writing. One fancies that it would come somewhere near being a record in journalistic crimes.

Meantime one wishes all of the readers of this paper success in the near future. There are distinct signs of a boom in aviation. If only somebody would break away from the conventional method of aircraft construction and would put on the market a really capable two-seater light aeroplane at about £400 and if only some official would cut through all the red tape at the Air Ministry and would start to re-equip the Royal Air Force with modern aircraft, there would be such a boom in aviation as that which took place in cars somewhere between the years 1902 and 1910.

One would like to live to see that boom. But still more would one like to see the really great boom when air lines will be promoted all over the World in the same way that construction of railway lines was promoted in this country about 1850-60. Probably the Great War will intervene and postpone that boom for some few years. Still, after all, considering the natural stupidity of human nature and its eternal conservatism, we have not done too badly in the past fifteen years. At any rate, as later pages of this paper show, we have actually got some fast aeroplanes at last.—C. G. G.



TWELVE YEARS AGO.—The Pemberton Billing "Supermarine" at the Olympia Aero Show of 1914. The streamlined hull and built-on flares would be modern to-day.

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AVRO type 504K with "AIRDISCO" engine.

This combination is very efficient and is admirably suited for training purposes, the machine retaining all the good points of an Avro type 504K for instructional work, and in addition, possessing other advantages due to the installation of a stationary air-cooled engine.



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This machine is the standard D.H.9 with Puma engine, and can be supplied either as a two or three seater.

When fitted with a "Nimbus" engine it has a greatly improved performance.



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This machine with Siddeley Jaguar engine possesses an excellent climb, is very fast and manœuvrable at high altitudes; in addition it has a low landing speed.

It is among the most modern of fast fighting scouts.



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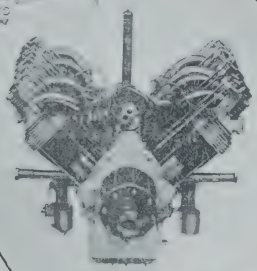
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The "CIRRUS" aero engine was the first low powered aero engine to pass the AIR MINISTRY 100 HOURS TYPE TEST.

These engines are being used by the five English Light Aeroplane Clubs, the Australian Light Aeroplane Clubs, the Irish Free State Aeroplane Clubs, and are standard for the De Havilland "Moth" Light Aeroplane and the Short "Mussel" Light Seaplane.



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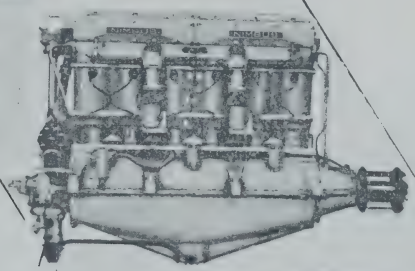
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This engine during its Type Test made a record for low petrol and oil consumption.

Lightest engine per h.p. of its type.

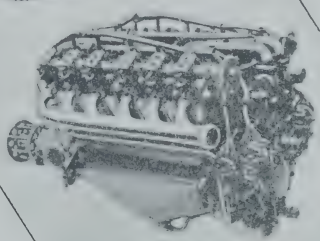
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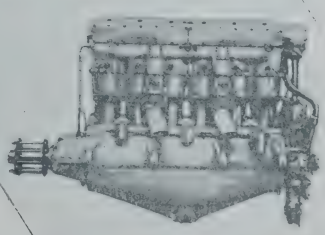
360 h.p. R.R. "EAGLE VIII."

The "EAGLE VIII" engine is well-known in aviation circles as a reliable power unit, and has standing to its credit many noteworthy achievements.



240 h.p. "PUMA."

The "PUMA" engine has a unique record for reliability, having been used on such long flights as LONDON to RANGOON and BACK, 17,000 miles, CIRCUIT of AUSTRALIA, 8,000 miles, BRUSSELS to BELGIAN CONGO, 7,000 miles, etc.



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Cables: "Airdisco, London."

THE ROYAL AIR FORCE.

The London Gazette.

June 22.

General Duties Branch.—The following Plt. Offs. on probation are confirmed in rank (May 28) :—C. A. Anderson, J. L. Adams, K. Benham, T. B. Byrne, L. G. Gray, D. V. Ivins, H. J. J. Mumford-Mathews, F. J. Parker, J. G. Parkin, L. C. Phillips, L. H. Smith, E. G. C. Stokes, R. O. O. Taylor, E. L. Wilson, R. H. Winn, W. G. Wooliams.

Flt. Lt. E. R. E. Playford is placed on the retired list at his own request (June 19); Flg Off P. D. Baker is transferred to the Reserve, Class A, in this rank, and is granted permission to retain rank of Flt. Lt. (June 21). The following Flg. Offs. are transferred to the Reserve :—Class A.—W. F. Warner (June 20). Class C.—C. E. Kelly (June 24); H. H. Storrs (June 23).

Stores Branch.—Flg. Off. on probation F. B. Ludlow is confirmed in rank (May 23).

Medical Branch.—Flt. Lt. A. E. Barr-Sim, M.B., is promoted to the rank of Sq. Ldr. (June 21).

Reserve of Air Force Officers.—The following are granted comns. on probation in the General Duties Branch in the ranks stated :—Class A (June 22).—Flg. Off. H. G. Travers, D.S.C.; Plt. Off. C. T. G. R. Miller; Plt. Off. R. E. La F. Wyatt. Class AA (June 6).—Plt. Off. H. Bradley. (June 7).—Plt. Off. L. J. C. Harding.

Plt. Off. H. Lyne is confirmed in rank (June 5); Flg. Off. G. A. Milbank is transferred from Class A to Class C (Apr. 20).

The following officers relinquish their comns. on completion of service :—(Apr. 20) Flg. Off. F. G. S. Musson, Flg. Off. E. E. Owen; (Apr. 30) Flt. Lt. T. R. Hackman; (May 1) Flg. Off. E. A. Kemp; (May 8) Plt. Off. G. C. H. Dorman; (May 15) Flg. Off. J. F. Turpie, Plt. Off. G. W. Perks; (May 22) Flg. Off. A. J. Bott, M.C., Flg. Off. I. Welby, M.C., D.F.C., Plt. Off. J. C. Montgomery; (May 29) Flg. Off. H. A. Mason, Flg. Off. J. S. Stubbs, D.F.C., A.F.C., Plt. Off. C. A. McIntosh; (June 19) Flg. Off. R. D. de L. Miller

Princess Mary's R.A.F. Nursing Service.—Sister Miss E. R. James relinquishes the acting appointment of Senior Sister (May 24).

Appointments.

Week ending June 29.

General Duties Branch.—Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., to H.Q., Egypt, for duty as Chief Staff Officer, 19/6.

Flight Lieutenants E. P. Roberts, M.C., D.F.C., D.C.M., to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 6/6. K. E. Ward, to No. 45 Sqdn., Iraq, 1/6. R. J. M. de St. Leger, to Home Aircraft Depot, Henlow, 5/7. J. A. W. Binnie, to Armament and Gunnery School, Eastchurch, 25/5. W. J. Millen, to No. 13 Sqdn., Andover, 1/7.

Flying Officers E. S. Borthwick-Clarke, to No. 41 Sqdn., Northolt, 11/6. R. A. R. Mangles, to Armament and Gunnery School, Eastchurch, 25/5. H. R. Lowry, to No. 39 Sqdn., Spittlegate, 8/6. C. H. Morgan, to No. 208 Sqdn., Egypt, 9/10. G. M. Trundle, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 30/5. R. H. Mahon, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 19/5. S. M. Thomas, to Aircraft Depot, Iraq, 25/5. J. A. P. A. Yearsley, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 25/5. W. V. R. Nicholl, to No. 84 Sqdn., Iraq., 8/6.

Pilot Officers J. S. Blomfield, to No. 60 Sqdn., India, 1/6. J. C. McE. Gibb, to No. 5 Sqdn., India, 1/6.

Medical Branch.—Flight Lieutenant A. Dickson, M.B., to Aircraft Depot, India, 27/5. Flying Officer (Dental) F. F. Anslow, to No. 4 Sqdn., S. Farnborough, 21/6.

Stores Branch.—Flying Officer B. E. Essex, to No. 1 School of T.T. (Apprentices), Halton, 5/7.

Accountant Branch.—Squadron Leader P. J. Wiseman, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 7/6. Flight Lieutenant S. G. Linssen, to No. 111 Sqdn., Duxford, 25/5. Flying Officer A. C. Lobley, to H.Q., Inland Area, Stanmore, 1/6.

The Higher Commands.

The Air Ministry announces the following appointments :—

Air Vice-Marshal Sir John Higgins, K.B.E., C.B., D.S.O., A.F.C., now Air Officer Commanding, Iraq, as Air Member of Council for Supply and Research, in December next.

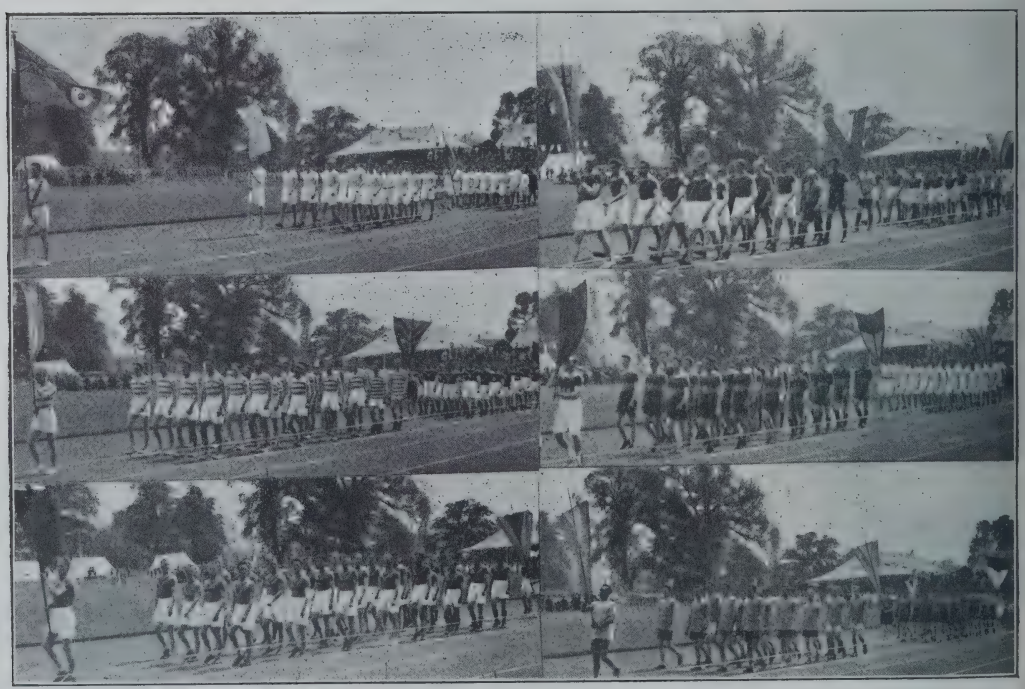
Sir John Higgins was appointed to the R.A.F. from the Royal Artillery in 1912, and served with distinction in France from 1914 with short intervals to 1918, when he came home to command the newly-formed Midland Area. After the war he was in command of the R.A.F. on the Rhine, and later became Air Officer Commanding the Northern Area. He served on the H.Q. Staff at the Air Ministry from January, 1921, until March, 1922, when he took over the command of the Inland Area. In 1924, he was posted to command the British Forces in Iraq. He was appointed to the D.S.O. in the South African War.

Air Vice-Marshal Sir Edward Ellington, K.C.B., C.M.G., C.B.E., *p.s.c.*, now Air Officer Commanding India, to command the Royal Air Force in Iraq, in November next.

Sir Edward Ellington joined the R.F.C. from the Royal Artillery in 1913. He held staff appointments in France from the beginning of the War until 1917, when he was appointed Deputy-Director of Military Aeronautics at the War Office. He became Director-General of Military Aeronautics in 1918 and shortly after was appointed Controller-General of Equipment at the Air Ministry. On the re-organisation of the Air Ministry in February, 1919, he became Director-General of Supply and Research with a seat on the Air Council and held this appointment until 1922, when he proceeded to Egypt to take over command of the R.A.F., Middle East. He relinquished this command in 1923, on appointment as Air Officer Commanding, R.A.F., India.

Air Vice-Marshal Sir Geoffrey Salmond, K.C.B., K.C.M.G., D.S.O., *p.s.c.*, now Air Member of Council for Supply and Research to command the Royal Air Force in India in January, next.

Sir Geoffrey Salmond was appointed to the R.F.C. from the Royal Artillery in 1913. After commanding R.F.C. Units in France, he pro-



ANOTHER BIG PARADE.—The R.A.F. Athletic Championships at Uxbridge.—Left, top : AC. Ferris, the Marathon winner, leading the Parade, followed by the Cranwell and Eastchurch teams. Right, top : The teams from Andover, Felixstowe and Worthy Down. Left, middle : Halton and Henlow. Right, middle : Flowerdown and Digby. Left, bottom : Uxbridge Depôt. Right, bottom : Gosport, Calshot and Sealand.

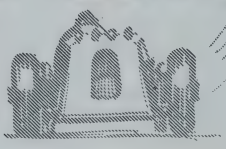


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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

FIRST on Land



BEFORE April 27th last, no one had ever travelled on land faster than 152.33 m.p.h. On that day, at Pendine Sands, Mr. J. G. Parry Thomas attained a speed of 160.349 m.p.h. He used *nothing but* standard Shell Petrol and Shell Oil—not special "racing mixtures," but ordinary grades obtained for him by the R.A.C. from garages—exactly the same as offered everywhere to the public.

Thus, Shell Petrol, called upon for speed, responded with a surge of power that enabled Mr. Thomas to break all records for speed ever made by others. And Shell Oils gave unfaltering lubrication to an engine that had to stand up to the terrific strain of miles-per-minute.

For increased power and acceleration—smoother running and longer mileage—fill up from the Sealed Shell Pump and the Branded Shell Oil Cabinet.

SHELL

Motor Oil and Petrol



FIRST in the Air

EVERY "pioneer" flight by Europe's premier airmen was made on *straight* Shell Aviation Spirit—*unmixed with anything else.*

FLIGHT DESCRIPTION	AVIATOR	MILES	DATE	PETROL
First Atlantic	Late Sir John Alcock	1,880	1919	Shell
First London-Cape	Colonel van Ryneveld	6,281 approx.	1920	Shell
First London-N. Africa ...	A. Cobham	1,300	1924	Shell
First Holland-Batavia ...	Van der Hoop	6,680	1924	Shell
First North Pole Attempt	Capt. Amundsen	—	1924	Shell
First Greater than round the world.	Marchese de Pinedo	34,000	1925	Shell

Shell Petrol contains exactly the same well-balanced power-elements as Shell Aviation Spirit—but in slightly different proportions. In Shell Aviation, these elements are blended to suit the requirements of aero engines—in Shell Petrol they are blended to meet the needs of car and motor cycle engines.

SHELL
Aviation Spirit

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

ceeded to the Middle East, where he commanded the widely-scattered detachments of the R.F.C., and later the R.A.F., from 1916 to 1922. During this time he made tours of inspection in Egypt, Servia, Palestine, Iraq and India. In 1922 he was appointed to the Air Council as Air Member for Supply and Research.

Air Vice-Marshal T. I. Webb-Bowen, C.B., C.M.G., now Air Officer Commanding, Inland Area, to command the Royal Air Force in the Middle East in November next, vice Air Vice-Marshal Sir Oliver Swann, on termination of his three-years' appointment.

Air Vice-Marshal Webb-Bowen joined the R.F.C. from the Bedfordshire Regt. in 1912, and on the outbreak of the War was appointed Assistant Commandant at the C.F.S. In 1915 he proceeded to France, where he served with distinction. On the cessation of hostilities he returned to the United Kingdom and for a few months commanded the South-Eastern Area. Early in 1920 he was appointed to command the R.A.F. in India, which post he relinquished in 1924, on appointment as Air Officer Commanding Inland Area. He was promoted Air Vice-Marshal in July, 1925.

Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C., now Director of Personal Services, Air Ministry, to command the Inland Area, Royal Air Force, in November next.

Air Vice-Marshal Longcroft joined the R.F.C. from the Welch Regt. on the formation of the R.F.C. in 1912, and served with distinction in France from August, 1914, with short intervals until the end of the War. He commanded a Wing from 1915 to 1917, when he returned home to command the Training Division. He was appointed Air Officer Commanding R.A.F., Cranwell, and was the first Commandant of the R.A.F. Cadet College, Cranwell, in 1919, which post he held until 1924, when he became Director of Personal Services at the Air Ministry. He was promoted Air Vice-Marshal in July, 1925.

The Oxford Encaenia.

An honorary degree of D.C.L. was conferred on Air Chief Marshal Sir Hugh Trenchard, Bart., G.C.B., D.S.O., Chief of the Air Staff, by the Chancellor of the University of Oxford on June 23.

According to *The Times*, the Orator said that Sir Hugh Trenchard was a super-Daedalus, and *Quid cius auspiciis Icari nostri effecerint, omnes scimus*. Through living in an island, we were exposed to perils of the air, and we rejoiced to think that one who had achieved such great distinction in the Great War was entrusted with the duty of countering such perils.

Sir Hugh was received as *Vir audacissime, qui, Daedalo felicior, et ipse per aethera volitas et alios sine clade volitare doces.*

The R.A.F.'s Next Big Flight.

If rumour is to be believed, the R.A.F.'s next big "showing-the flag" flight will be from England to Singapore and back.

The machines employed will probably be Supermarine Southampton flying-boats, with Napier engines. Four boats will compose the Flight.

It is expected that the start will be made in the Autumn.

No. 20 Squadron Re-union.

The Annual Re-Union Dinner of No. 20 Squadron will be held at Gatti's Restaurant, in the Strand, at 8 o'clock on July 3. Major W. H. C. Manfield, D.S.O., will be in the Chair.

Tickets, 12s. 6d. each, may be obtained from Capt. J. A. Horne, c/o Kitching and Tabraham, 10, Austin Friars, E.C.2. Telephone London Wall 5005.

R.A.F SPORTS.

The Athletic Championships.

The R.A.F. Athletic Championships were held at the Stadium, Uxbridge, on June 23, 24 and 26, and produced some remarkably good times.

On the first day four new Air Force records were made, L-AC. Goodall (Uxbridge), ran the three miles in 15 mins. 6.3-5 secs., beating Flt. Lt. Irwin's record by nine seconds. F-S. Fretwell beat AC. Slack's record for the 120-yards' hurdles by 1-5th sec. AC. Turner beat Flt. Lt. Irwin's record for the mile by 5.1-5 secs., and Cpl. Worrall beat his own previous record for the two-mile walk by 4.2-5 secs. Another good performance was a jump of 6 ft. 0¼ in., by Flg. Off. Nuttall (Kenley) who holds the record, with 6 ft. 0⅝ in.

In the Team Championships Cranwell won the King's Cup again with 49 points, Uxbridge being second with 42 points and Halton third with 35.

Digby won the Air Council Cup again with 31 points, Gosport being second with 24 and Upavon third with 19. The Tug-of-War (open) was won by Cranwell (holders), and the Tug-of-War (junior) by Gosport (holders). Both the winning teams showed splendid training, both as teams and individuals. In practically every team race the teams were better than last year.

At the conclusion of the programme the prizes were presented by the Lady Maud Hoare, who received a bouquet from the Captain of the Champion Team.

The results in detail were :—

INDIVIDUAL CHAMPIONSHIPS.

100 *Yards*—Plt. Off. Vines (Farnborough), AC. Onley (Shrewsbury), L-AC. Carragher (Andover); 10 2-5 secs. 220 *Yards*—Plt. Off. Vines (Farnborough), Cpl. Hodgson (Uxbridge), AC. Trueman (Uxbridge); 23 2-5 secs. 440 *Yards*—Plt. Off. Vines (Farnborough), AC.2. Hopper (Halton), Flt. Off. Lord Bandon (Farnborough); 52 3-5 secs. 880 *Yards*—Plt. Off. Russell Stracey (Old Sarum), AC. Sanderson (Manston), L-AC. Pugh (Northolt); 2 min. 4 4-5 secs.

One Mile—AC. Turner (Uxbridge), AC. Johnson (Lee-on-Solent), Cpl. Clarke (Upavon); 4 mins. 28 secs. *Three Miles*—L-AC. Goodall (Uxbridge), L-AC. Ferris (Uxbridge), AC. Tym (Manston); 15 min. 6 3-5 secs. 120 *Yards Hurdles*—F-S Fretwell (Hawkinge), AC. Gordan (Worthy Down), Flt. Lt. Walmsley (Cranwell); 16 2-5 secs. *Two Miles' Walk*—Cpl. Worrall (Uxbridge), Sjt. Digby (Uxbridge), L-AC. Thompson (Worthy Down); 14 min. 56 2-5 secs.

Long Jump—AC. Grainger (Martlesham Heath), Plt. Off. Cannon (Manston), AC. Ward (Upavon); 21 ft. 0¼ ins. *High Jump*—Flg. Off. Nuttall (Kenley), AC. Pope (Cranwell), AC. Coley (Halton); 6 ft. 0¼ ins. *Putting-the-Shot*—Wing Cdr. Pattinson (Andover), Cpl. Eyles (Ruislip), S-M. Wilson (Digby); 36 ft.

TEAM CHAMPIONSHIPS.

440 *Yards' Relay, Open*—Uxbridge, Cranwell, Henlow; 46 3-5 secs 440 *Yards Relay, Junior*—Farnborough, Northolt, Digby; 47 secs. *One Mile Relay, Open*—Uxbridge, Halton, Cranwell; 3 mins. 38 3-5 secs. *One Mile Relay, Junior*—Digby, Gosport, Farnborough; 3 mins. 41 secs. *Two Miles Relay, Open*—Uxbridge, Cranwell, Halton; 8 mins. 29 2-5 secs. *Two Miles Relay, Junior*—Gosport, Calshot, Upavon.

One Mile Team, Open—(1) Uxbridge (AC. Turner, L-AC. Goodall, L-AC. Hester, L-AC. Ferris), (2) Cranwell, (3) Halton; 4 mins. 36 3-5 secs. *One Mile Team, Junior*—(1) Calshot (AC. Dunne, Cpl. Topping, AC. Bluck, AC. Jarratt), (2) Upavon, (3) Digby; 4 mins. 46 secs.

360 *Yards Hurdle Relay, Open*—Cranwell, Halton, Manston; 53 3-5 secs. 360 *Yards Hurdle, Junior*—Hawkinge, Digby, Seland; 51 3-5 secs.

Long Jump, Team, Open—Halton, Cranwell, Uxbridge; 58 ft. 11¼ ins. *Long Jump, Team, Junior*—Upavon, Martlesham, Northolt; 40 ft. 11 ins.

High Jump, Team, Open—Cranwell, Netheravon, Halton; 15 ft. 11 ins. *High Jump, Team, Junior*—Martlesham, Sealand, Worthy Down and Andover tied; 10 ft. 6 ins.

Putting-the-Shot, Team, Open—Henlow, Cranwell, Halton; 92 ft. 4¾ ins. *Putting-the-Shot, Team, Junior*—Andover, Digby, Bircham Newton; 65 ft. 0¾ ins.

Tug-of-War, Open—Cranwell beat Uxbridge. *Tug-of-War, Junior*—Gosport beat Digby.

AIR AFFAIRS IN PARLIAMENT.

IMPERIAL AIRWAYS.

In the House of Commons on June 24, in reply to a question by LT.-CDR. KENWORTHY, the UNDER-SECRETARY OF STATE FOR AIR said that the total mileage flown by British civil aircraft flying for hire or reward in 1925 was 1,031,000 miles. The number of miles flown by Imperial Airways Ltd. was 811,711 miles. The cost to the State of subsidised services was 3s. 4½d. per mile flown. In reply to a supplementary question, Sir Philip Sassoon said that the figures showed no increase over 1924.

THE AUXILIARY AIR FORCE.

In the House of Commons on June 24, in reply to a question by SIR H. BRITTAIN, the UNDER-SECRETARY OF STATE FOR AIR said that a fifth squadron of the Auxiliary Air Force would be found towards the end of the year.

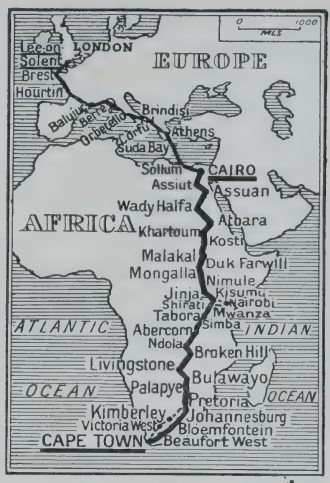
THE R.A.F. RESERVE.

In the House of Commons on June 24, in reply to a question by LT.-CDR. KENWORTHY, the UNDER-SECRETARY OF STATE FOR AIR said that the strength of the R.A.F. Reserve as at Apr. 30, 1926, was 991 officers and 6,238 airmen. The number of Reserve pilots available for flying was 708, of whom 588 were in regular flying practice.



THE TUG-OF-WAR.—Cranwell (left) pulling Uxbridge (right).

Cairo-Cape-Cairo-England



"The most practical and solid achievement yet achieved in World Aerial travel." *Daily Telegraph* 22 : 6 : 26

Four Royal Air Force Fairey machines fitted with NAPIER engines fly 56,000 miles.

"NEVER before have a number of aeroplanes, flying in company, carried out without a hitch an extended journey over continent and ocean, over high land and low, and in great temperature contrasts.

The four British machines which landed here (Lee-on-Solent) to-day had flown 14,000 miles without any trouble of any nature to cause delay, and *without engine renewals or stoppages, or worry of any kind.*

The engines were Napier Lions, and it is a point of interest that all the escort machines also were Napier driven.

The four machines covered an aggregate of 56,000 miles without mishap, and it is noteworthy that the high altitude aerodromes at Tabora, Johannesburg and Buluwayo, where the air is so thin that it seriously impairs efficiency of engines and planes, gave in this case no trouble." *Daily Telegraph*, 22nd June, 1926.

For consistent reliability and efficiency install the

NAPIER

The finest Aero Engine in the World

D. NAPIER & SON, Ltd., ACTON, LONDON, W.3

Go and see these machines at the Royal Air Force Display at Hendon Aerodrome on Saturday, 3rd July, 1926.

THE ROYAL AIR FORCE CAPE FLIGHT.

The following official communiqué concerning the journey of the Cape Flight, R.A.F., has been issued by the Air Ministry :—

The flight of four aircraft of the Royal Air Force from Cairo to Capetown and return and thence to England, where they arrived on June 21, was purely a Service flight carried out in the ordinary course of Royal Air Force training and no attempt was made to break records. The whole flight has been completed without incident, according to programme and without any change of engines.

The object of the flight was to visit the Dominion of South Africa and the various Colonies en route; to gain experience in long-distance flying in formation, keeping to a scheduled time-table, and so to test the regularity with which reinforcements can be despatched by air, to gain experience in flying through changing climates and conditions, and over new country, to co-operate with the local forces stationed in close proximity to the route followed, and last but not least to visit the South African Air Force

The flight was carried out with Fairey III.D aircraft with Napier Lion engines. This was an all-British aircraft and engine that had already been tried out in the East and found reliable.

Wing Commander C. W. H. Pulford, O.B.E., A.F.C., was appointed to command the Flight.

Meteorological conditions indicated that the flight should take place during March-June.

The aircraft were erected at Aboukir and flown to Cairo.

Meanwhile the ground organisation was completed. In addition to Cairo, bases were established at Kisumu (Kenya) and Pretoria (the Headquarters of the South African Air Force). The route which was approximately the same as that followed in 1919 was divided into three sectors, viz, Northern (Cairo to Nimule), Middle (Jinja to Abercorn), and Southern (N'Dola to Capetown).

In each of these sectors a Royal Air Force Officer arranged the preparation of the necessary aerodromes, and was given every assistance by the local authorities.

At 05.00 hours on Mar. 1, the Cape Flight left Cairo and proceeded according to programme along the Nile Valley via Aswan (Mar. 1), Wadihalfa (Mar. 3), to Khartoum (Mar. 4). The Flight left Khartoum on Mar. 6, but were delayed at Kosti by severe local storms for two days.

Malakal was reached on Mar. 8, Mongalla, where a magneto had to be changed, on the 10th, and Nimule on the 12th. The Flight arrived at Kisumu, the Middle Sector base, up to scheduled time on March 13th. The flight left Kisumu on Mar. 17 and after landing at Mwanza arrived at Tabora the same day.

At Tabora, a day was spent co-operating with the local forces, at the request of the O.C. 2nd Battalion The King's African Rifles. Photographs were taken and the visibility of troops from the air in bush country was studied. On Mar. 19, the Flight left Tabora and arrived at Abercorn.

Between Tabora and N'Dola there was no communication with the Flight as at Abercorn there is no telegraph or wireless. On the 21st the Flight left Abercorn and reached N'Dola. The next stage was to Broken Hill (Mar. 23) and then to Livingstone (Mar. 25).

The Flight left Livingstone on Mar. 28 and proceeded to Bulawayo. On Mar. 31 they flew to Palapye and to Pretoria on Apr. 2. The aerodromes in this area are all at high altitudes and the atmosphere very rarified.

At each town in the Union a day or two was spent in visiting the local authorities, meeting the inhabitants and becoming acquainted with local conditions. After 3 days at Pretoria, the Flight left for Johannesburg, only ½ an hour's flight distant. On the 8th they flew to Bloemfontein.

Continuing the flight on the 11th over the Karroo, they reached Beaufort West, and on the 12th they arrived at Capetown, according to programme time. The 5,290 miles from Cairo to Capetown were flown in approximately 63 flying hours at an average speed of 84 m.p.h.

A week was spent at Capetown.

On Apr. 19 the Flight left for Pretoria, where they arrived on the 22nd. On the way, Victoria West was visited and another day was spent at Kimberley.

At Pretoria, the South African Air Force placed their hangars and workshops at the disposal of the Flight, and with their assistance a thorough overhaul of the aircraft and engines was carried out. The aircraft and engines were found to be in splendid condition except for the oil tanks, which showed slight signs of deterioration owing to the heat. As a precaution new ones in copper were constructed locally and installed. These gave satisfaction on the return journey to Cairo.

On May 3, the Flight left Pretoria, and following the same route as on the outward journey, pushed ahead of programme time in order to visit Nairobi, the Capital of Kenya, to which Sir Edward Grigg, the Governor, had specially asked them to come.

Kisumu was reached on May 11. The flight between Abercorn and Tabora and between Tabora and Kisumu was rendered difficult owing to bad weather conditions.

On the 12th, the Flight proceeded to Nairobi and spent three days there, returning to Kisumu on May 15.

On the 16th, Kisumu was left behind and the Flight crossed Uganda and reached the Nile Valley again. Jinja was visited on this occasion.

On May 27, one day ahead of scheduled time, the Flight arrived at Cairo. The return journey from Capetown had taken 67 actual flying hours and the average speed was 79 m.p.h. The whole flight from Cairo to Capetown and back had been accomplished without a change of engines.

After two days in Cairo, the Flight proceeded to Aboukir, where the land undercarriages were removed and float undercarriages substituted, preparatory to the continuation of the flight to England.

On June 9 the Flight left Aboukir and arrived at Sollum after a six-hour flight against a strong head wind.

On the 10th they crossed the Mediterranean, landing in Suda Bay en route for Phaleron (Athens), where they arrived at noon.

A day was spent in Athens, and on June 12 the Flight proceeded to Brindisi, landing at Corfu to refuel.

June 13 (Sunday) was spent at Brindisi and on the 14th the Flight flew to Naples, making two short overland flights en route.

On the 16th the Flight proceeded along the coast to Orbetello and on the following day flew across the Gulf of Genoa via Elba and Cape Corso to Berre, a French seaplane station near Marseilles. Here a day was spent.

On the 19th the journey to Hourtin (near Bordeaux), which involves an overland crossing of 310 miles, was commenced. The Flight refuelled at Balaruc (Cette), but owing to a north-easterly gale springing up were detained there until the next day, when they flew to Brest, refuelling at Hourtin en route.

On the 21st the Flight proceeded to Lee-on-Solent, where they arrived according to programme.

The total distance flown was approximately 14,000 miles, the actual flying time about 180 hours, and the whole flight carried out according to programme.

This flight has been of great value to the Royal Air Force, for it has provided some most valuable experience in long-distance flying over new country and through changing climates. It has clearly proved to the World in general the reliability and the efficiency of British aircraft and engines, and the high state of efficiency of the Royal Air Force.

It is hoped that a more detailed history of the flight will shortly be available when the Officer Commanding has had time to prepare his official report

THE GUGGENHEIM £40,000 PRIZE COMPETITION.

A most important announcement has been made by Mr. Harry F. Guggenheim, President of the Daniel Guggenheim Fund for the Promotion of Aeronautics. Briefly it is that the Fund will put up prizes to the value of £30,000 or £40,000 for an International "Safety First" Competition to be held in America.

Special reference is made to the Handley Page Slot and the Hill Tail-less system in the Fund's statement, which reads as follows :—

New York, June 18.

Harry F. Guggenheim, President of the Daniel Guggenheim Fund for the Promotion of Aeronautics, authorises the following statement :—

The Board of Trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics has after careful consideration come to the conclusion that the Fund should direct its primary energies to the promotion of ways and means to secure *safey in flying*.

Since Mr. Daniel Guggenheim placed at the disposal of the Board of Trustees the sum of $2,500,000, the Board has been studying the directions in which its resources could best be used for fundamental advancement of the art and science of aviation. It was realised that unless some well-defined policy was established, the money at the disposal of the Fund could easily be dissipated without fundamental results.

The officers of the Fund have accordingly made a careful inquiry into the conditions surrounding aeronautics both in this country and Europe, and have consulted officers of our own Government and foreign Governments, as well as experts, manufacturers and operators of aeroplanes in many countries.

It is felt that if a fair factor of safety is established in the practice of aviation, other measures of progress will follow rapidly and as a matter of course.

The Fund might have devoted its efforts to the development of aerodromes, sound policies of Government control, development of meteorological and communication services, and the perfection of flying administration to the end that aerial transportation should be operated in the same orderly manner as rail and marine transportation. All of these are important matters, but are for the most part Government functions and secondary, it is believed, to the *development of safety*.

The primary reason for the slow commercial development of aviation in this country, and for its unsatisfactory financial status in those countries where, through Government subsidies, air lines are established, would seem to be lack of public confidence in flying. The success of commercial aviation should be assured the day that the public can be convinced not by statistics, but by actual demonstration, that airplanes are inherently no more dangerous than steamships or railroads.

From fundamental research work now in progress and from the construction of some new types of airplanes involving a number of radical aerodynamic departures from the conventional airplane, sufficient progress has already been made in the direction of safety to justify faith that a complete solution of this problem is possible and that it may even be very near at hand. Indeed to-day flying is actualy much safer than it is generally assumed to be.

Due to the weak financial status of the infant airplane industry in all parts of the world, manufacturers are financially unable to develop on their own initiative, types that have not a definite commercial value. This restricts development for the most part to war types.

Governments at the present day are almost the sole buyers of airplanes. Some orders, to be sure, are placed for commercial planes to operate over Government subsidised air routes in Europe and for our newly-organised mail routes in America, but this demand is insignificant in comparison with the military demand.

Such commercial planes as are made are naturally an adaptation by the manufacturers of military types to meet commercial needs. The aerial transport companies are unable to devote primary attention to designing a safe plane. Their financial positions are not strong, their present most urgent need is a plane with a high "pay load," economical of operation and construction. They are unable to devote that attention primarily to *safety* which is fundamentally required if permanent progress is to be realised.

The chief problem in promoting safety in flying may be thus stated :—

To-day, when the speed of the conventional airplane is reduced below its so called "stalling speed," it ceases to function like an airplane. If the airplane is flying at sufficient altitude and is aerodynamically well constructed, the pilot may recover from the "stall" and regain control. However, should the stall occur in leaving the ground, the cause of a great number of accidents, a crash is inevitable.

In a like manner in forced landings, crashes are commonly due to the speed necessary to avoid a stall being lost in attempting to fly over some object adjacent to a closely confined place chosen for the landing or in landing in uneven or closely confined ground.

Major R. H. Mayo, Consulting Engineer and representative of the Fund in England, has summarised as follows the essential characteristics of the present day airplane which make the development of the safety factor necessary :—

(1) The landing speed is far too high, and the length of run after landing is too great.

(2) The gliding angle is too flat, making the approach to a given spot for landing too difficult.

(3) The length of run required before taking off is too great.

(4) The angle of ascent after taking off is not great enough.

(5) If the aeroplane is stalled, it becomes unstable and at the same time control is lost

In England, for example, great progress has been made recently great strides are being made in meeting them fundamentally.

In England, for example, a great progress has been made recently towards the solution of the problem of inherent stability and complete control at low speeds.

Professor B. Melville Jones at Cambridge has done and is continuing to do highly important fundamental work on this subject, the value of which is demonstrated in Mr. Handley Page's slot and aileron control.

Capt. G. T Hill's tail-less aeroplane is another highly important step in the direction of inherent stability.

Senor de la Cierva's extraordinary new development for flight, the Auto-Giro, also is being actively promoted in England.

To bring to a focus, and to give the greatest possible encouragement to every endeavour to make the aeroplane safe, the Board of Trustees of the Guggenheim Fund have determined to organise an "Open International Aircraft Competition." We should probably appropriate $150,000 to $200,000 for this purpose so as to make the Competition interesting and attractive to the best designers and manufacturers of aircraft throughout the world

This Competition will be held in this country. Experts from many countries will be consulted in the framing of rules and regulations to govern the contest, and it is believed that such interest can be aroused that this contest will not only become an actual inducement to rapid development of safety, but also serve as a demonstration of the marvellous progress which has been made in the direction of safe flying.

In addition to the International Competition, details of which will be announced from time to time, the Trustees of the Daniel Guggenheim Fund have authorised its officers to make a careful investigation and prepare further specific recommendations working towards :—

(1) The encouragement of the perfection of flying instruments and accessories with particular regard to the perfection of radio or other aids to navigation and the control for fog flying.

(2) The encouragement of research in aerology.

(3) The encouragement of development of means to prevent collision.

(4) The encouragement of development of aircraft with motor accessible in flight.

(5) The encouragement of development of fire and splinter-proof fuselage.

Flying is now entering upon a new era, and the world is on the verge of developments which will make it clear that not only is flying over great distances mechanically feasible, but that the whole art and science can be made so nearly accident proof as to place flying on a basis of safety comparable with travelling by rail, steamship or automobile.

TOKYO-COPENHAGEN.

On June 23, Lieut. Botved and his engineer, Sergt Olsen, arrived at Copenhagen on their Fokker C.V (450 h.p. Lorraine-Dietrich engine) having made the return trip from Tokyo, via Siberia, in nine days.

The itinerary of this remarkable flight is as follows :—June 15, Tokyo—Heidjo (1,375 kms.); 16, Heidjo—Moukden (590 kms.); 17, Moukden—Chita (1,100 kms.); 18, Chita—Irkutsk (900 kms.); 19, Irkutsk—Krasnojarsk (950 kms.); 20, Krasnojarsk—Kourgan (1,750 kms.); 21, Kourgan—Kazan (1,180 kms.); 22, Kazan—Moscow (750 kms.); 23, Moscow—Copenhagen (1,800 kms.).

The total distance of 10,595 kms. (approximately 6,600 miles) was covered in 72 flying hours.

THE R.A.F. DISPLAY.

Their Majesties the King and Queen will be present at the Seventh Royal Air Force Display which will take place at Hendon on July 3. The programme will begin at midday and will be completed at about 6.30 p.m.

In addition to the Air Manœuvres by Radio-Telephony which was described in THE AEROPLANE of June 9, a number of new events descriptive of R.A.F. training have been arranged in addition to the popular ones seen in previous years.

Four Bombing Squadrons, Numbers 11, 12, 39 and 207, will take part in a demonstration of Wing Formation flying. Two of these Squadrons are equipped with Fairey Fawns and two with D.H.9as. In the rehearsal which took place on June 24 to enable the pilots to acquaint themselves with the conditions of Hendon Aerodrome, each Squadron took off in echelon formation two of them turning port and two starboard on leaving the aerodrome. Taking a wide sweep they crossed each other in the centre of the aerodrome. Combined manœuvres by all four Squadrons then followed and the demonstration concluded with a "Wing Star" with each individual Squadron in Squadron formation and the Wing in Star formation. No R/T or W/T is used during these manœuvres the formation depending on the pilots' judgment.

Another spectacular event will be an exhibition of evolutions by a Group of two Wings of three Fighter Squadrons. Each Squadron will consist of nine machines and will bear distinctive markings. The Squadrons taking part in this event and their markings are :—No. 19 (Duxford) Grebes (Blue and dicing) No 23 (Henlow) Gamecocks (Red and blue squares). No. 29 (Duxford) Grebes (Black crosses on a white ground). No. 32 (Kenley) Grebes (Blue and white diagonal bars). No. 41 (Northolt) Siskins (Red bar on a white ground). No. 56 (Biggin Hill) Grebes (Red and white dicing).

At the rehearsal which took place at Hendon on June 25 the Squadrons took off in Squadron formation, divided into two Wings which wheeled port and starboard. They combined over the aerodrome and flew past the Royal Box dipping in salute. This was followed by various evolutions by the Group as a whole. There is no doubt that the spectacle of fifty-four standard Service machines carrying out a series of perfect manœuvres in the air at once will demonstrate to the public the very high state of efficiency attained by the post-War pilots of the R.A.F. and no less by the mechanics who look after the machines and engines.

A minor demonstration of the efficiency of the R.A.F. was given during the rehearsal when a Bristol Fighter of No. 24 Squadron carrying a press photographer as a passenger made a forced landing just outside the aerodrome. The R.A.F. crew engine did a record turn-out even for these commonly swift and mobile craft and seemed to be half-way across the aerodrome before the machine hit the ground. Likewise the R.A.F. ambulance. Fortunately neither the pilot nor passenger was seriously hurt.

A Long-distance Reliability Trial by four Night-Bombing Squadrons will start early in the programme and will probably finish at the beginning of the homeward trek. The Squadrons taking part in this event will be No. 7 (Bircham Newton) Virginias; No. 9 (Manston) Virginias; No. 58 (Worthy Down) Virginias; and No. 99 (Bircham Newton) Hyderabads. The course will be *via* Calshot, Hawkinge, Manston, Farnborough, Northolt, Henlow, Netheravon and Farnborough. The marking will be based on reliability, picking up formation, number of aircraft completing the course in formation, prompt and efficient wireless communication with the ground control station and the fastest time over the course. No. 99 Squadron will start scratch.

A demonstration of low-bombing at a moving target will be given by No. 19 (Fighter) Squadron on Grebes, the winners of the eliminating contest for this event. No bomb-sights are used in this demonstration the bombs being released at the judgment of the pilot from about 50 ft.

The Air Ministry race this year will be flown on standard Service Fighters. The Directorates of Organisation and Staff Duties, the Directorate of Training and the Directorate of Personal Services have entered Hawker Woodcocks. The Directorate of Technical Development has entered a Gloucester Gamecock, the Directorate of Equipment has entered a Fairey Flycatcher, and the Directorate of Operations and Intelligence has entered a Siskin. The race will be a handicap of about 20 miles.

Another race will be for pilots of the R.A.F. Reserve of Officers on Bristol Fighters.

The Squadrons taking part in the set piece will be No. 12 (Bombing) Squadron from Andover and No. 43 (Fighter) Squadron from Henlow.

Three Army Co-operation Squadrons will compete in the Message Picking-up Competition. An eliminating contest open to one Bristol Fighter from each of the Army Co-operation Squadrons and one from the School of Army Co-operation was held at Farnborough on May 28 to reduce the number of competitors on the day of the Display.

Another competition is the Instructors' Competition for a Cup presented by Group Captain H.R.H. the Duke of York. It is open to one instructor from each of the Flying Training Schools and the School of Technical Training (Apprentices). All competitors will fly the standard Avro 504K.

Aerobatics will be carried out during the lunch interval.

Full details and descriptions of the various events will be given in the official Programme which is necessary for a proper appreciation of the Display.

On the succeeding pages will be found photographs of all the new types of machines which will fly past the King and Queen.

THE BIG PARADE AT THE R.A.F. DISPLAY.

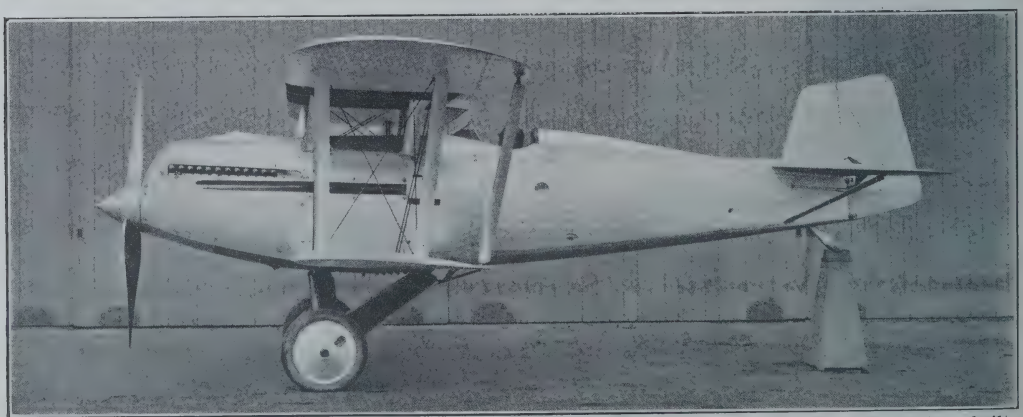
Hereafter follow photographs of the sixteen more or less new aeroplanes which will appear as one of the leading attractions at the R.A.F. Display on Saturday. It is at any rate satisfactory to note that, thanks entirely to private enterprise, in defiance of the hindrance of Air Ministry experts, we have at last got four pursuit-ships equal to, and possibly surpassing, the best owned by other nations.



THE AVRO AVENGER.—A single-seat fighter built by A. V. Roe and Co. Ltd. to take the 525 h.p. (direct-drive) Napier Lion VIII engine.



THE HAWKER HORNBILL.—Another single-seat fighter. This is fitted with the 700 h.p. (direct-drive) Rolls-Royce Condor IV engine.



THE FAIREY FIREFLY.—Yet another single-seat fighter, which, like the Avenger and Hornbill, has been built without official specification, but with the intention of getting the best possible performance and fighting efficiency. The Firefly is fitted with the 430 h.p. Fairey Felix or Curtiss D.12 engine. Although their speeds are secret they are claimed to be the three fastest pursuit-aircraft in the World.



THE GLOSTER GORCOCK.—A single-seat fighter fitted with the 525 h.p. (direct-drive) Napier Lion VIII engine. This machine is the military development of the Gloster Bamel racer and possesses a very fine all-round performance.



THE HAWKER HORSLEY.—A day-bomber fitted with the 670 h.p. Rolls-Royce Condor III engine. This machine has gone into production as new equipment for the R.A.F. day-bombing squadron equipment.



THE FAIREY FOX.—A high-performance day-bomber fitted with the 430 h.p. Fairey Felix (or Curtiss D 12 engine. The Fox has gone into production for R.A.F. equipment. It is this machine, built nearly two years ago in open defiance of the Air Ministry's experts, which is chiefly responsible for our remarkable progress in the past twelve months.



THE D.H. HYENA.—A two-seater Army Co-operation machine fitted with the 385 h.p. Armstrong-Siddeley Jaguar IV engine. It is a development of the D.H.9a of nine years ago.



THE BRISTOL BOARHOUND.—A two-seater Army Co-operation biplane fitted with the 425 h.p. Bristol Jupiter VI engine. It has been designed by Capt. Frank Barnwell, the designer of the famous Bristol Fighter, which has been the Army's mainstay for nearly 10 years.



THE ARMSTRONG-WHITWORTH AJAX.—The machine actually taking part in the Big Parade will be known as the Atlas, which is an Army Co-operation machine, fitted with the 385 h.p. Jaguar IV engine. The Ajax is very similar, and except for minor details can be claimed as the same machine.



THE VICKERS VESPA.—A two-seater Army Co-operation biplane fitted with the 425 h.p. Bristol Jupiter VI engine.



THE AVRO AVA.—A multi-seater, twin-engined night-bomber and coastal torpedo defence landplane fitted with two 670 h.p. Rolls-Royce Condor III engines. It is worth while to compare this with the Avro Manchester which is shown on page 675.



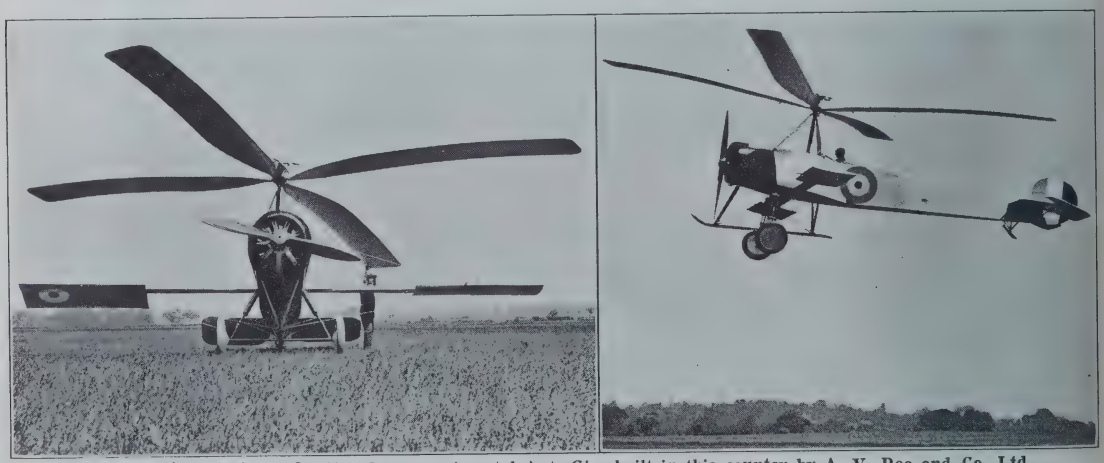
THE BLACKBURN SPRAT.—A two-seater seaplane and deck-landing training biplane fitted with the 270 h.p. Rolls-Royce Falcon III engine. It can be fitted with either all-metal floats or a land-going undercarriage.



THE VICKERS VENDACE.—A two-seater convertible seaplane and deck-landing biplane fitted with the 270 h.p. Rolls-Royce Falcon III engine.



THE HILL PTERODACTYL.—The experimental tail-less monoplane designed and built by Capt. G. T. R. Hill. The engine is a 34 h.p. Bristol Cherub III.



THE CIERVA AUTO-GIRO.—The first experimental Auto-Giro built in this country by A. V. Roe and Co. Ltd. The fuselage is that of the standard 504 Avro fitted with a 130 h.p. Clerget engine.

THE NEW LONG-DISTANCE RECORD.

On June 26 Capt. L. Arrachart, with his brother, Adjutant P. Arrachart, left Le Bourget on a Potez 28 biplane (550 h.p. Renault engine), at 05.05 hours, in an attempt to fly to the Persian Gulf and thus beat the World's Record for distance covered in a straight line, a record held by Capt. Arrachart and Capt. Lemaître, who, on Feb. 3, 1925, flew from Villacoublay to Villa Cisneros, 1,980 miles, in 25 hours.

Capt. Arrachart carried 3,400 litres of petrol and 320 litres of oil, sufficient for a flight of at least 30 hours.

To save weight he carried very little personal kit and food and no wireless apparatus, and this latter fact accounts for the lack of information concerning his progress.

On June 26 a telegram from Yechilkeni reported that an aeroplane travelling towards Asia flew over Constantinople at 19.30 hours. Later it was reported as passing over Aleppo.

On June 27 the Potez 28 landed at Shaiba aerodrome, Basra, at 19.35 hrs., having covered 2,737 miles in 26 hrs. 35 mins.

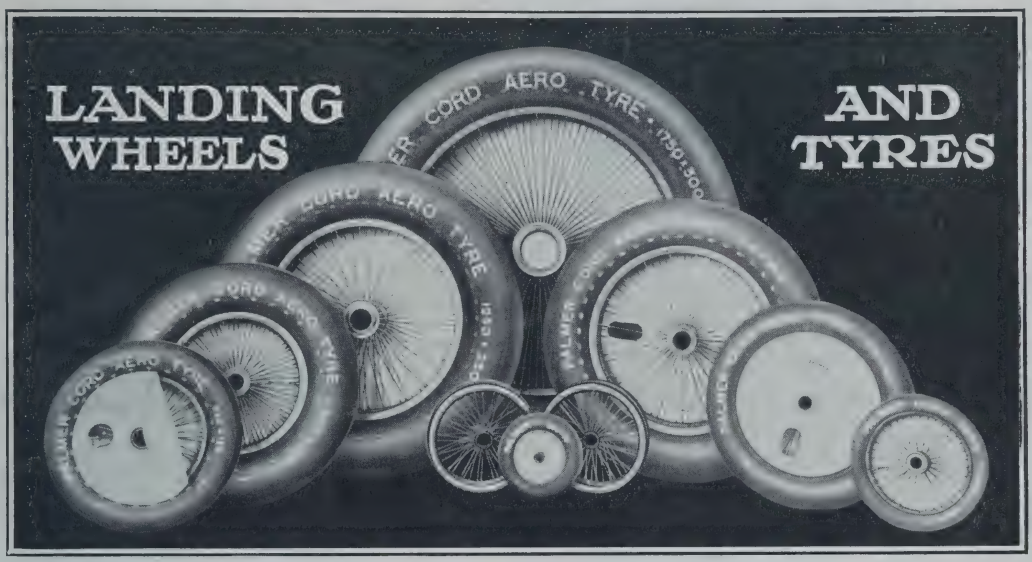
There was not sufficient petrol left in the tanks to taxi the machine to the sheds.

The main petrol pump broke down over Constantinople and Adjutant Arrachart worked the hand pump all the way to Basra, some twelve hours, a feat of physical endurance that rivalled even that of the pilot.

The brothers Arrachart intend to leave Basra on June 29 on their return journey to Paris.

This flight must be compared with that by Lieut. Macready who, in 1923, flew from New York to San Diego, Cal.,—2,650 miles, in 27 hours.

PALMER



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	80	150.	38.09	104/46
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
650×65	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
600×75	21	160.	28.	Central
,,	180	150.	38.09	104/46
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38 09	132 46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132 46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38·09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125.60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
,,	194	185.	55.	125/60
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central
17 0×350	193	400.	125.	Central

Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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THE FLYING CLUBS.

The London Aeroplane Club.

Report for week ending June 27.

The total flying time for the week was 60 hrs. 35 mins

The following members had flying instruction :—Miss O'Brien, Col. Farfan, G. Eady, T. H. O. Richardson, Capt. Godfrey, H. R. Thomas, J. H. Saffery, J. C. Parkinson, G. W. Hall, B. B. Tucker, S. J. Bassett, B. Waugh, C. H. Craig, O. J. Marstrand, S. C. Richards, H. R. Presland, K. V. Wright, E. A. Cook, S. Nesbitt, P. O. Davison, H. Solomon, D. H. P. Esler, E. K. Blyth, E. E. Stammers, E. D. Moss, M. R. Berney, F. S. Adams, S. H. J. Garne, H. F. Wight, L. C. Sykes, Sir John Rhodes.

The following members flew solo :—Sq. Ldr. M. E. A. Wright, E. E. Stammers, A. R. Ogston, N. J. Hulbert, A. G. D. Alderson, Major K. M. Beaumont, W. Hay, Mrs. Eliott-Lynn, G. H. Craig, J. H. Saffery, E. D. Moss, A. Lees, S. O. Bradshaw, E. S. Brough, N. Jones, A. P. Hunt, G. Wallcousins, E. A. Cook, R. Malcolm, Sir John Rhodes, J. Barros, Capt. W. Roche Kelly, H. Kennedy.

The following associate-members had joy-rides :—Mrs. Bailey, Miss Salusbury, Miss Oldham, Miss Mullens, R. V. Crump, J. D. Lloyd, Miss Malcolm.

Mr. A. P. Hunt successfully completed the flying tests for his Aviator's Certificate.

The R.A.F. Display.—Flying will be suspended on Saturday, July 3, the day of the Royal Air Force Display at Hendon. The Air Council has decided to allow members of the London Aeroplane Club to purchase two tickets for the price of one to the 10s. enclosure. Not more than two tickets can be purchased by any one member. Tickets may be obtained from the Pilot Instructors, Stag Lane Aerodrome, Edgware, or from 3, Clifford Street, London, W.1.

Purchase of D.H. Moth.—The following donations have been received :—E. E. Stammers, £5; Capt. J. T. Godfrey, £2. Total to date, £748 5s.

The King's Cup Air Race.—The Race for the King's Cup will be held at the Hendon Aerodrome on Friday and Saturday, July 9 and 10, from 10 a.m. each day. The Royal Aero Club will give the members of the London Aeroplane Club free admission on both days on presentation of their Membership Badges. Motor-cars will be charged 2s. each. Refreshments will be supplied all day.

The London Aeroplane Club will be represented in the King's Cup Air Race. A D.H. Moth has been entered by the Duke of Sutherland and will be flown by Capt. F. G. M. Sparks.

The Duke of Sutherland's Presentation Moth.—On Saturday afternoon, July 10, the Duke of Sutherland, Vice-President of the Royal Aero Club, will present a D.H. Moth to the London Aeroplane Club. The presentation will take place at the Hendon Aerodrome on the occasion of the King's Cup Race.

The Newcastle-upon-Tyne Aero Club.

Report for week ending June 20. (*Delayed in post.*)

No flying took place on Monday and Tuesday owing to torrential rain. Only one machine, G-EBLY, was in service, LX still being without an engine, though one is expected early in the coming week.

Total time for the week :—30 hrs. 40 mins. Dual 11.05, Solo 15.50, Passenger 1 hr. 50 mins., Tests 30 mins.

The following members flew under instruction :—Miss Leathart, Messrs. Stawart, Bruce, Twine, Phillips, Dixon, Howard, Leete. Secondary Dual :—Messrs. MacMillan, C. Thompson, R. N. Thompson, N. S. Todd. Solo :—Messrs. MacMillan, C. Thompson, R. N. Thompson, Bruce, Dixon, and Phillips.

Passengers :—Miss Stawart, Miss Reece.

On Sunday night, at about 10.0 p.m., Mr. A. D. Bruce made his first solo flight, putting up a very good performance. Mr. Bruce has been one of the "probables" for some time, but has always contrived to take his instruction on days when it was not suitable to make first solo flights.

On Thursday, Major Packman, with Mr. F. Howard Phillips as passenger, flew to Belsay Castle, where some 180 Crippled Children were being entertained by The Sunderland Rotary Club and Mr. Hugh Middleton, O.B.E. After throwing out three large parcels of toys, each parcel being attached to a small parachute, a landing was made at a pre-arranged spot near to the Castle.

Report for week ending June 27.

The total amount of flying done during the week was 7 hrs. 30 mins., made up as follows :—

Dual instruction, 4 hrs. Solo flying, 3 hrs. 15 mins. One passenger flight with Major Packman of 15 mins.

The following members flew under instruction :—Messrs. Shaw, Detchon, Howard, J. Bell, Thirlwell and Twins

Mr. Baxter, Chairman of the Newcastle Motor Club, flew with Major Packman on Tuesday.

On the 23rd, Wednesday, Mr. W. Baxter-Ellis flew a Moth with Mr. Paish as passenger.

Mr. Baxter Ellis and Major Packman each made flights of about 10 mins. on the Gull on Wednesday night, the 23rd.

On the Thursday morning, Mr. Ellis flew once, Mr. Heppell twice, and then Major Packman took the machine up for the flight which proved to be his last

Later, on the 24th, when Major Packman should have flown at Druridge Bay before the Motor Races organised by the Newcastle Motor Club, Mr. P. Forsyth Heppell flew over the course, performed a very graceful and slow loop, and Mr. Todd flew the machine back to the aerodrome. The carrying out of this flight out of respect to Major Packman was very much appreciated by all and was a very touching incident. Back streamers flew from the struts of the Moth.

The members of the Club mourn the loss of an excellent Instructor, a particularly energetic worker, always keen to fly under any conditions, and anxious to promote flying in any way possible. Aviation has lost more than is possibly appreciated by his death.

Messages of condolence were received from the following :—Mr Harold Perrin, on behalf of the Royal Aero Club and the London Aeroplane Club. Mr. J. F. Leeming, on behalf of the Committee and members of the Lancashire Aero Club. Mr. Stack, Chief Instructor, Lancashire Aero Club. Mr. J. F. Barnes, on behalf of the Yorkshire Aeroplane Club. Mr. O. E. Simmons, on behalf of the Hampshire Aeroplane Club. Mr. C. G. Grey. The Directors and Staff of the de Havilland Aircraft Company. Mr. J. Lanchester Parker. Mr. H. Baker, on behalf of the Anglo-American Oil Co. Mr. P. Hodgson, of the Scottish Office, A.I.D., and the Staff of the Berkshire Tours.

Floral tributes were received from the Lancashire Aero Club, the de Havilland Aircraft Co. (Directors and Staff), and the Staff of the Berkshire Aviation Tours, in addition to a very large number of local individuals and bodies.

On the 25th Mr. W. Baxter-Ellis took up as passenger Mr. P. M. Dodds, the Coroner, who held the inquest upon the late Major Packman, for 15 mins. And on Sunday, the 27th, with Mr. N. S. Todd as passenger, he flew over the funeral procession to the Cemetery at Cramlington, circled around during the Service in the Chapel, and while the Royal Artillery Trumpeter sounded the "Last Post" he glided over the grave while Mr. Todd dropped a bunch of flowers.

The Yorkshire Aero Club.

Report for week ending June 25.

Our new Moth, having been passed and certified complete with all the necessary documents, etc., was called for by Capt. West at Stag Lane on Friday, the 18th. He set off for Yorkshire at 15.00 hours, striking a head wind all the way to Grantham, which place was reached at 17.00 hours, where Capt. West wisely decided to stop for juice. In the meantime the wind dropped and Sherburn was reached in 40 mins. from Grantham.

On Saturday, the 19th, Capt. West piloted the Club Secretary, Mr. J. Barnes, on a visit to Catterick in connection with our Air Pageant. We are trying to arrange for a squadron to give an exhibition of formation flying on the "great day." Unfortunately there was no squadron there, the R.A.F. not having yet taken up its quarters.

The following members had dual instruction :—Messrs. Swift, Barnes, McCalman, Lax and Little.

Solo flights were made by Mr. Fielden.

Thank Heaven the aerodrome will be mown on Monday next, the grass at present proving a distinct nuisance, so we hope to have a better report next week.

Total hours flown, 9 hrs. 35 mins. Dual instruction, 4 hrs. 10 mins. Joy-rides and travelling, 5 hrs. 25 mins.

The Midland Aero Club.

Report for week ending June 26.

The total flying time was 10 hrs. 15 mins.

The following members had flying instruction :—S. R. H. Miller, E. R. King, F. J. Beard, and H. Beamish.

Solo flying was again restricted for the reason stated last week.

Mr. A. R. H. Miller has done 14 hours' flying in the past 8 days.

It may be of some interest to place on record an indication of the amount of flying put in by some of the members who are now flying solo. H. Willis 24 hrs., L. Knox 22 hrs., R. L. Jackson 14½ hrs., E. Brighton 30 hrs., W. Swann 18½ hrs., H. Hassall 18 hrs.

The Southern Aero Club.

Report for week ending June 27.

Hours flown :—G-EATU, 6 hrs. 5 mins., G-EALI., 9 hrs. Total, 15 hrs. 5 mins.

The following members had dual instruction :—Messrs. Parker, Poole, Richardson, Baxter, Naunton, Hewett, Ashby, Wallis, Bainbridge, and Boucher.

On Thursday afternoon Messrs. Parker and Richardson made their first solo flights, both putting up a very creditable perfomance.

The weather has been good and it is hoped to get several members through for their tickets shortly.

The Hampshire Aeroplane Club.

About 40 members were present at the First Annual General Meeting of the Hampshire Aeroplane Club on June 16, when the Chairman of the Interim Committee, Mr. O. E. Simmonds, outlined the very satisfactory and substantial progress that had been made since the Inaugural Meeting on Mar. 2. In short, the main object, that of obtaining a £4,000 subsidy from the Air Ministry, had been achieved, and the Club was promised delivery of two de Havilland Moths early next month. Activities would begin on the aerodrome at Hamble, placed at the Club's disposal by A. V. Roe and Co. Ltd.

Arrangements were well in hand for a most attractive Club Room, which it was hoped to have available by the opening date.

A set of Rules and Regulations had been drawn up, and these were read to the meeting and ratified after some discussion on the various points that arose.

The Interim Committee, its work completed, then resigned. But its members were re-elected *en bloc* to the new Committee, which it was decided should carry on until December, 1927.

The members of the Committee thus elected were Messrs. R. H. Bound, A. N. Clifton, R. V. Perfect, O. E. Simmonds, F. C. Stokes, and A. R. Van den Bergh. In addition, Mr. N. J. Bishop was also elected to the Committee. It was unanimously agreed that Mr. R. Bishop should represent the associate members on that body.

Mr. R. V. Perfect was elected Hon. Assistant Secretary, the Committee obtaining power to co-opt an Hon. Secretary and Hon. Treasurer at a later date.

Finally Mr. C. C. Sharp and Mr. J. Taylor Matthews, who had given the Committee a great deal of assistance on the legal side of the Club's formation, were elected Hon. Solicitor and Hon. Auditor to the Club respectively.

The meeting closed at a late hour, with a politely expressed desire on the part of the authorities to evict the members of the Hampshire Aeroplane Club into Above Bar Street, Southampton.

Mr. Kenelm Lee-Guinness, the well-known sportsman, whose initials are responsible for the famous K.L.G. sparking plugs, which are largely the outcome of his motor-racing experiences, has accepted the Vice-Presidency of the Club.

The Private Owners' Club.

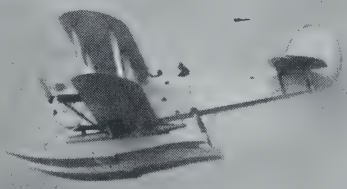
The British Private Aircraft Owners' Club, which carried out a successful Club tour on Sunday, June 20, to Cowes and back by Shoreham, has received several invitations to visit the owners of estates in various parts of the country for a flying tea-party. Members of the Club have inspected various landing grounds suggested by their would-be hosts and it seems likely that invitations will be accepted in the near future. The Club was actually formed in February last with eleven members all owning and/or flying their private aeroplanes. There are now seventeen members.

Blackburn
AIRCRAFT

The Blackburn 'VELOS' seaplane is the outcome of 17 years experience and research.



Designed to carry a torpedo or bombs.
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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 22; Tuesday, 24, Wednesday, 24; Thursday, 26; Friday, 25; Saturday, 28; Sunday, 17.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostend—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 74, passengers 587, freight 18 tons.

AIR UNION:
Paris—London: Machines 48, passengers 253, freight 20 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 23, passengers 93, freight 2½ tons.

SABENA:
Brussels—London: Machines 12, passengers 45.

DEUTSCHE LUFTHANSA AG.:
Berlin—London: Machines 0, passengers 0.

SPECIAL:
Machines 9, passengers 6.

Total number of trips by British Machines, 81, carrying 591 passengers. Foreign Machines, 85, carrying 393 passengers.

Comparative Figures:

Week ending June 27:
Machines, 166; Passengers, 984; Crews, 214; Total personnel, 1,198.

Corresponding week, 1925:
Machines, 178; Passengers, 773; Crews, 219; Total personnel, 992.

Corresponding week, 1924:
Machines, 148; Passengers, 585; Crews, 183; Total personnel, 768.

Corresponding week, 1923:
Machines, 131; Passengers, 473; Crews, 218; Total personnel, 691.

Corresponding week, 1922:
Machines, 126; Passengers, 260; Crews, 173; Total personnel, 433.

Corresponding week, 1921:
Machines, 102; Passengers, 381; Crews, 123; Total personnel, 504.

Corresponding week, 1920.
Machines, 113; Passengers, 221; Crews, 134; Total personnel, 355.

Croydon Notes.

It seems that accidents when they happen on the air lines usually happen in threes. Therefore after the two mishaps which were reported in these notes last week everyone anxiously awaited the third. Sure enough, it came to pass on Midsummer Day.

M. Boden had left Croydon on a Goliath with two passengers and goods. Just as he was leaving the coast one of the engines went *malcontent*. M. Boden managed to get down at Littlestone (the place which was visited some time ago by a vagrant airscrew of the Hampstead). The undercarriage was desolated and the machine sat down on her abdomen. The pilot and passengers were unhurt, and the latter proceeded to Paris in a spare machine.

M. Borotra again used the air lines for a dash from Wimbledon to Work. As one explained last week, he is the French equivalent of a City magnate, and having some spare moments in which he was not assisting at the frequent fainting fits of the frail Suzanne, he returned to Paris and caught a morning Goliath back to Croydon on Monday.

A Czecho-Slovakian machine, piloted by M. Stanovsky, arrived at the aerodrome on Wednesday. This machine is engaged in a lengthy tour of Europe and North Africa. Mr. Hewlett of the Anglo-American Oil Co. (Pratts) saw to his fuel supplies, and he went off rejoicing on Friday. The aircraft was an Aero type 11 with 240 Perun II engine.

Pilots who have recently been up for Medical Boards have found that the hear-worthiness of their ears has dropped slightly below specification. The theory is that they have been affected by the high-revving. airscrews on the W.10s.

It is quite understandable that the constant high-frequency air beats only a few inches off the ears may be causing quite a lot of harm.

The really serious question though is, what redress a pilot would have who had been turned down as medically unfit for this cause? Anyhow, prevention is better than cure and it is not yet too late to remedy the defect.

The Fokker-Jupiters are now equipped with a French version of the famous Reed metal airscrew, the rights for which, as everyone should know by this time, are held in this country by the Fairey Aviation Company. They are proving highly satisfactory.

The Fokker which recently forced-landed on the beach at Seabrook had a Reed airscrew, and it was only bent. So presumably, on being straightened, it will be as good as new.

The only objection to the metal screws is that when they have passed through constant bad weather the leading edges become as sharp as razor blades. This perhaps may result in close shaves, but now that mechanical starters are becoming general no other harm need result.

A.D.C. Aircraft Ltd. are full up with work. On Monday Mr. Perry was testing an Armstrong-Airdisco. On Wednesday he flew to Farnborough and back on a D.H.9. Later in the week he was testing a Bristol and a Nimbus-Martinsyde.—G. D.

MR. COBHAM'S FLIGHT TO AUSTRALIA.

Mr. Alan J. Cobham and Mr. Elliott were due to leave Rochester at dawn to-day, Wednesday, on a high-speed flight to Australia on a D.H.50J, with an Armstrong-Siddeley Jaguar engine. All-metal floats have been fitted by Short Bros. and the airscrew is a Fairey-Reed. Wakefield's Castrol oil is being used throughout. B.P. petrol will be used as far as India. Thence to Singapore the Burma Oil Company will arrange supplies. The remainder of the flight to Sydney will be in the hands of the Shell Company.

Titanine Dope will be used on the wings and fuselage, and Mallite three-ply as in the Rangoon and Cape Town flights.

Mr. Cobham is taking with him photographs of the Test match, which, it is hoped, will reach the Australian newspapers in record time.

Incidentally, if any well-meaning folk feel called upon, either during or after Mr. Cobham's venture, to make him a presentation, one would ask them to think Imperially and see a little way beyond cigarette cases Through presentations Mr. Cobham has now enough cigarette cases to set up a gold and silver-smith's shop and to present all his friends with christening, birthday, wedding and divorce presents into the bargain.—G. D.

THE KING'S CUP AIR RACE.

The race for the King's Cup, presented by His Majesty The King, will be held at Hendon Aerodrome on Friday and Saturday, 9th and 10th of July. The race will start early in the morning and competitors will be arriving and departing at short intervals all day.

Members of the Royal Aero Club will be admitted free on presentation of their Membership Badges.

The charge for motor-cars will be 2s.

The following competitors are expected to take part:—

Vickers Vixen, 450 h.p. Napier Lion. (Entrant, Mr. Douglas Vickers. Pilot, F. R. C. Scholefield.)

A.D.C. Nimbus-Martinsyde, 300-330 h.p. Nimbus. (Entrant, Col. J. Barrett-Lennard. Pilot, Capt. F. T. Courtney.)

Martinsyde A.D.C.1, Mark III A. Jaguar. (Entrant, Col. M. O. Darby. Pilot, Sq. Ldr. W. G. Hubert Jones.)

D.H.51, 120 h.p. Airdisco. (Entrant, Air Commodore J. G. Weir. Pilot, Col. The Master of Sempill.)

Bristol Badminton, Bristol Jupiter. (Entrant, Sir George Stanley White. Pilot, F. L. Barnard.)

D.H. Moth, 27/60 Cirrus. (Entrant, Capt. G. de Havilland. Pilot, Capt. G. de Havilland.)

D.H. Moth, 27/60 Cirrus. (Entrant, Sir Charles C. Wakefield, Bart. Pilot, Capt. H. S. Broad.)

D.H. Moth, 27/60 Cirrus. (Entrant, The Duke of Sutherland. Pilot, Capt. F. G. M. Sparks.)

Nimbus-Martinsyde, 300/330 Nimbus. (Entrant, Col. M. O. Darby. Pilot, H. H. Perry.)

Cranwell Monoplane, Bristol Cherub. (Entrant, Sq. Ldr. W. Thomas. Pilot, Flt. Lt. N. Comper.)

D.H.37, 300/330 h.p. Nimbus. (Entrant, Alan S. Butler. Pilot, A. S. Butler.)

The latest revised version of the daily course for the King's Cup Race on July 9 and 10 is as follows:—

Hendon, Martlesham (72 miles), Cambridge (49 miles), Hendon (45 miles)—Total 166 miles. (Stop 30 mins.)

Hendon, Coventry (74 miles), Cheltenham (44 miles), Hendon (32 miles)—Total 200 moles. (Stop one hour.)

Hendon, Martlesham, Cambridge, Hendon, again (166 miles). (Stop 30 mins.)

Hendon, Coventry, Cheltenham, Hendon, again (200 miles).

Total for each day 732 miles.

Apparently the triangular courses have been adopted for fear of collisions on straight out-and-home courses if there should be a fog during the race.

The turning points have been selected with the extreme care which is always taken by the Committee of the Royal Aero Club to prevent the Public from being annoyed by the noise of the race while in progress. This policy has also the advantage of minimising the risk of a forced landing happening in a crowded area.

Doubtless a final, last, and ultimate revised version of the course will be issued to the pilots when they are on the starting line. But as they are all skilled navigators, and mostly very good-tempered, that will make no difference to them. And the Public do not matter anyhow.—C. G. G.

SERVICE AERODROMES AND CIVIL AIRCRAFT.

Air Ministry Notice to Airmen, No. 29, of 1926, states:—

1. Notice to Airmen, No. 22, of 1926, is cancelled and the following substituted:—

2. The General Rules for Air Traffic comprised in Section III of Annex D of the International Air Convention, and reproduced in Section III of Schedule IV to the Air Navigation (Consolidation) Order, 1923, are observed by all Royal Air Force aircraft, except in the following circumstances:—

(*a*) During air fighting practice.

(*b*) During formation flying, training or practice.

(*c*) When aircraft of experimental units are engaged in research.

3. Civil aircraft, therefore, should as far as possible avoid flying over or in the vicinity of Royal Air Force aerodromes and should in all cases give way to formations of aircraft. In doing so they should observe the same rules as would apply between a flying machine and an airship.

4. Civil aircraft en route to or from the Continent should, in particular, avoid flying over Biggin Hill Aerodome. Aircraft leaving or approaching Croydon should pass over or near Tatsfield Lighthouse.

HENDON AERODROME.

Air Ministry Notice to Airmen, No. 33, of 1926, states :—In view of the large number of Service aircraft which will be employed at Hendon aerodrome from June 30 till July 3, both dates inclusive, in connection with the R.A.F. Display, civil aircraft are warned on those dates against landing at this aerodrome and against flying within the area shown on the plan appended, unless consent has previously been obtained in writing from the Secretary, Air Ministry, to whom application should be made.

Cricklewood and Stag Lane aerodromes are suitable for the landing of civil aircraft conveying persons by air to the Display, the road distances from Hendon aerodrome being 3¾ and 1¾ miles respectively.

STRIKE PAY.

For his services in organising and arranging aeroplane services for the distribution of *The Daily Mail* during the General Strike, Mr. Harold Perrin has been presented with a gold cigarette case by the proprietors of *The Daily Mail*.

Judging by this and other memorial presentations, the Strike must have given quite a fillip to the Gold-and-Silver-Bashers' Union, who have, apparently, been working overtime ever since.

A SECRET DISCLOSED.

For once the Air Ministry's Secrecy Department seems to have scored over THE AEROPLANE. It has kept the design and production of the Saunders Valkyrie, the big flying-boat with three Condor engines, so secret that one did not even know who was the actual designer of the boat.

One is now told by an entirely disinterested but quite reliable person that the boat was in fact designed by Captain B. Thomson, assisted by Mr. H. Knowler. Mr. Beadle, to whom reference was made in the paragraph recording the trial flight of the Valkyrie, is the chief draughtsman of Mr. Saunders' Experimental Department, which had nothing to do with building the Valkyrie.

Captain Thomson joined the R.N.A.S. in the very early days of the War and served at Dunkirk. He was afterwards invalided from active service, but was put in charge of various technical jobs at the Admiralty and later at the Air Ministry, being chiefly in charge of seaplane designs, co-ordinating the work of the various seaplane and flying-boat constructors.

After the War he was with the Hawker Engineering Company for a time, but went to Mr. Saunders at Cowes three years ago with the Valkyrie as a result. One hears that as a flying machine the Valkyrie is considerably better than "quite satisfactory," and one congratulates Captain Thomson and Mr. Knowler on their success. And no less congratulations are due to Mr. D. Nicolson, the Director of S. E. Saunders Ltd. who has been primarily responsible for the production, as distinct from the experimental, side of the works.

SWEET USES.

Those firms whose advertisements appeared in the first emergency issue of THE AEROPLANE, published during the humorous episode known as the Great Strike, will be interested to know that the leading American aeronautical paper, *Aviation*, has paid THE AEROPLANE the compliment of reproducing both sides of that single sheet, by way of illustrating the English habit of carrying on in spite of difficulties,—or perhaps one should say muddling through.

As *Aviation* has a large and influential circulation in all foreign countries where aeroplanes are bought, and is read by the military and naval Air Authorities of those countries just as is THE AEROPLANE itself, those advertisements have had their value considerably emphasised.

One thanks *Aviation* for the compliment which it has paid to THE AEROPLANE and one admires the thoroughly sporting and non-commercial spirit in which it has given the British Aircraft Industry so much free advertising. The action is on a par with that of the U.S. Navy when it refused to fly over the course to claim the Schneider Trophy in 1924.

There is also interest in noting the fact that the same emergency issue of THE AEROPLANE was reproduced by the Toronto *Star*, as it was the first of all the emergency issues of British newspapers to reach Canada. It is true that Canada buys no aeroplanes, other than American wartime scrap, but as the effect of advertising is largely cumulative, those advertisements may have some effect as ground bait.

A MATTER OF FACT.

In the Croydon Notes last week the statement was made to the effect that the new-type Jaguars in the Hampstead had been removed because it seemed that they were not quite right. THE AEROPLANE is now informed that they have been removed, after many hours of regular air-line work, simply so that they might be stripped down and examined by the A.I.D. to see whether there was any sign of wear. So far as their running was concerned they were giving no trouble. And there was no outward indication of anything being other than right. One is glad to be able to make this correction, for the more good engines we produce in this country the better, and there is no better test of the reliability of an engine than constant hammering through all sorts of weather on an air-liner.—C. G. G.

PERSONAL NOTICES.

DEATH

PACKMAN.—At Cramlington, on June 24, as the result of a flying accident, Stanley Arthur Packman (Major, R.A. and R.A.F.), aged 31.

Major Packman served with distinction in the Gunners and in the R.A.F. during the War, 1914-18, and retired with the rank of Major. He was appointed flying instructor to the Newcastle Aero Club last November and was testing the Gull, belonging to three members of the Club, when the accident occurred.

According to the report of the inquest, Major Packman was gliding in to land after a short flight when he flattened out too much and stalled, the machine diving from a height of about 20 feet. He was thrown clear of the machine, but fractured his skull and broke both legs.

[One has always regarded the Gull as a dangerous machine, as it was very quick on its controls fore and aft, and yet the controls seemed inadequate. It held an airworthiness certificate, and was doubtless strong enough so far as construction was concerned. But the position of the pilot, right up in the nose of the machine, enclosed in what was in effect only a streamline fairing, certainly exposed him to unnecessary danger. The pity is that so useful a member of society as Major Packman should have been killed in it.—C. G. G.]

IN MEMORIAM.

ANDERSON, MAJOR HENRY GRAEME, M.B.E., M.D., F.R.C.S., late Consulting Surgeon to the Royal Air Force.—In ever loving memory of my beloved husband, who fell asleep June 28, 1925.

"Sleep on, beloved, and take thy rest."

MARRIAGE.

KNOWLES-BROWN—CORDINGLEY.—On June 24, at St. Alban's, Golders Green, Arthur W. Knowles-Brown (late R.A.F.), to Marjorie Kathleen, only daughter of Mr. and Mrs. William Cordingley, of 47, The Vale, Golders Green, N.W.

FORTHCOMING MARRIAGE.

LACROIX—BARHAM.—The engagement is announced between Flt. Lt. A. T. S. Leguen de Lacroix, R.A.F., son of E. F. L. Leguen de Lacroix, of Chediston Hall, Chediston, Suffolk, and Doris Ethel, only daughter of Mr. and Mrs. Cecil H. Barham, of Broadstairs.

BIRTHS.

BEAULAH.—On June 26, at "Ny-Pairk," Forty Lane, Wembley Park, to Dorothy (*née* Wilson), wife of Sq. Ldr. E. A. Beaulah, R.A.F.—a son (Edward Antony).

GOATCHER.—On June 17, at Vallima, Lee-on-Solent, to Amy, wife of C. A. Goatcher, R.A.F.—a daughter.

HILTON.—On June 21, at Littlecot, Monckton-Road, Alverstoke, to Alice Campbell (*née* Cleghorn), wife of Flt. Lt. L. M. Hilton, R.A.F.—a son.

Royal Aero Club.

GREAT AIR RACE

1,500 Miles

for

THE KING'S CUP

presented by

HIS MAJESTY KING GEORGE V.

HENDON AERODROME,

FRIDAY & SATURDAY, JULY 9 & 10

(10 a.m. to 6 p.m.)

Machines arriving and departing continuously.

REFRESHMENTS ON THE AERODROME.

Admission to enclosures on the Aerodrome, 2/-

Motor Cars, 2/-

FIFTEEN YEARS OF THE AIRCRAFT INDUSTRY.

BY W. H. SAYERS.

A.D.C. AIRCRAFT LTD.

Founded in 1919 as The Aircraft Disposal Co. Ltd., to take over from the Government surplus stocks of aircraft and to dispose of them to their own and the Government's mutual advantage, this firm is a relatively late-comer to the British Aircraft Industry. But the firm's stock of Wartime aircraft and aero-engines link it up direct with all the pioneer designers who did such good work between ten and fifteen years ago.

As, moreover, the firm acquired in 1925 the name, manufacturing rights and goodwill of Martinsyde Ltd., and have decided to design and build new types of aircraft in the future, there is a very definite link between this firm and the period when THE AEROPLANE first came into being, for in 1911 Mr. Martin and Mr. Handasyde were already producing at Brooklands the earliest of the Martinsyde series of machines.

From the beginning of their operations, A.D.C.s have never been mere retailers of stock aeroplanes. Their works at Croydon, which were originally built for Cubitts Ltd. to be run as a Government aeroplane factory, are on a large scale, and are equipped thoroughly for all the processes of aircraft construction. Aeroplanes sold by them, even if they differed in no wise from standard types, have always been supplied after an overhaul of such thoroughness as to deserve more accurately the description of a reconstruction.

This has been the case not only with aeroplanes, but also with aero engines, and with all the articles of equipment which they have supplied either installed in aircraft or as separate items.

As a result surplus British aircraft and accessories which have reached either the home or foreign markets have been as good as, or often better than, new. And A.D.C., and the British Aircraft Industry as a whole, have acquired an exceedingly fine reputation in many quarters of the globe as a result of their excellent work.

The supply of surplus aircraft obviously cannot be inexhaustible, and even if it were, the potential market must necessarily contract after the lapse of years. Hence the adoption of the policy, already mentioned, of embarking on the design and manufacture of new types. On this side the firm have in Mr. John Kenworthy, the designer of the Austin Whippet, the first, and one of the best, of light aeroplanes, an innovator, as well as a renovator, of great possibilities.

This policy does not apply only to aeroplanes, but also to aero-engines. In this department the firm have already achieved very marked success. They have upon their staff Major F. B. Halford, well known for his large share in the design of the B.H.P. aero-engines.

Three A.D.C. engines are already on the market. Two are air-cooled—one the Airdisco, 130 h.p. of eight cylinders, and the other the Cirrus (27-60 h.p.), of four cylinders. The Cirrus may be said to have placed a new complexion on the problem of the light aeroplane for sporting and private flying. It is a simple, robust, and reliable engine, easy and cheap to maintain, giving ample power for a robust two-seater, and to this engine—and the de Havilland Moth designed for it—the success which has attended upon the formation of the various British Flying Clubs may almost entirely be ascribed.

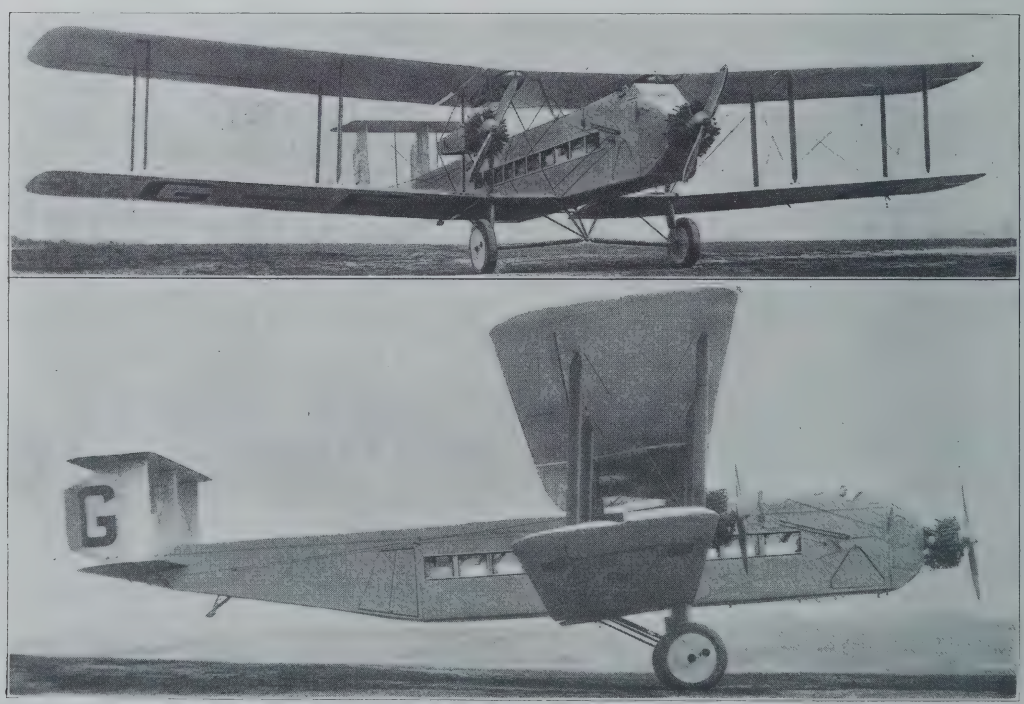
A later type—the Nimbus—is a six-cylinder vertical water-cooled engine of 300-350 h.p., weighing slightly under 2 lbs. per h.p., and exceedingly economical in fuel and oil. It may be regarded as a natural development of the B.H.P. engines in general and of the famous Puma in particular, and as such its qualities may almost be taken for granted. Owing to its combination of high power with low weight and low frontal area, it is an ideal engine for high speed single-seater machines, and in an A.D.C.-Martinsyde it has already given performances at least the equal of engines of modern design and considerably higher power.

THE AIR NAVIGATION AND ENGINEERING CO. LTD.

This firm was established during the war by M. Norbert Chéreau with the object of producing Blériot and Spad designs, and did a very considerable amount of useful work at that time.

Although the firm as at present constituted is of relatively recent origin, its founder, M. Chéreau, has been a prominent figure in British Aviation circles for many years. Fifteen years ago, when THE AEROPLANE was founded, he was the representative in Britain of the Blériot interests, and the firm which was originally known as Blériot Aeronautique is thus a development of M. Chéreau's activities of that date. Since the War it has been forced very largely to rely upon other classes of work, particularly light automobile construction, but it has never lost its interest in aircraft.

Its most notable achievements recently have been the production of the two A.N.E.C. light aeroplanes, first the single-seater with the 698 c.c. Blackburne engine which gained a half-share in the first prizes in the competition for fuel economy by achieving 87.5 m.p.g., won the altitude prize by reaching 14,400 ft. and developed a speed of 74 m.p.h. round



THE VERY LATEST.—The Armstrong-Whitworth Argosy (three Jaguar engines) built for use by Imperial Airways Ltd. It has seats for twenty passengers.

a 12-mile triangular course at the 1923 Lympne meeting.

Their next light aeroplane was a two-seater with Anzani 1,100 c.c. engine which took part in the 1924 light aeroplane contest. Although engine trouble prevented it from completing any of the tests, there is no room to doubt that it is an excellent flying machine.

A recent product of some considerable interest is the six-seater commercial biplane which was produced for the Adelaide-Sydney service in Australia. This machine was in fact a complete remodelling of a design prepared by another firm.

In the remodelled form a machine with a strikingly good all-round performance has been produced.

ARMSTRONG-SIDDELEY MOTORS LTD.

Armstrong-Siddeley Motors Ltd. is of cognate origin with Armstrong-Whitworth Aircraft Ltd. in that it represents an alliance concluded shortly after the war between the Armstrong-Whitworth interests and the old Siddeley-Deasy Motor Car Company. The Aircraft Co. builds aircraft alone, and the firm now in question motor-cars and aero-engines. Both the parent firms were in existence long before the War, but neither was actively interested in aviation at the beginning of this paper's career.

Nevertheless the history of the present Armstrong-Siddeley engines has roots at least as far back as 1911. In the first volume of THE AEROPLANE is to be found a description of the mounting devised for a Viale 40 h.p. five-cylinder radial air-cooled engine for use in an Avro biplane. This engine was for its time an extremely reliable and satisfactory power plant, and Mr. S. M. Viale, its designer, has been largely concerned in the development of the existing Armstrong-Siddeley radial engines.

The Siddeley-Deasy works during the War were responsible for the production of the well-known Siddeley Puma engine, a development of the B.H.P. (Beardmore-Halford-Pullinger) which was itself a development of the famous Beardmore, which in turn was developed from the pre-War Austro-Daimler. The Puma was and still is one of the most satisfactory engines of the 200/300 h.p. class. With other engine makers the Siddeley Co. turned their attention to the air-cooled radial as a substitute for the rotary type at some period between 1916 and 1917. The original designs—the forefathers of the present Lynx and Jaguar engines—were prepared to met an Air Board specification for high-powered engines to replace the rotary in the fighter-scout type of aeroplane. As is well known the production of high-powered rotary engines presents a number of serious difficulties, which were by no means completely solved by the end of the War.

The Armstrong-Siddeley firm, however, persevered in their work with the type during the lean years immediately following the Armistice, with results in the Jaguar and Lynx, which are now so well known as to require no elaboration here.

ARMSTRONG-WHITWORTH AIRCRAFT.

This firm, which is really an amalgamation of the aeronautical interests of Mr. J. D. Siddeley and of Armstrong-Whitworths, was formed in its present state in 1921, but has actually a much longer history behind it.

The Armstrong-Whitworth Aircraft department was originally established as far back as 1913, with works at Gosforth, Newcastle-on-Tyne, and during the war produced many valuable aeroplanes, notably the well-known Ack.Ws to Mr. Koolhoven design, one of which was the only design to serve right through the War from 1914 to 1918.

Siddeley Deasy Motors Ltd., well known as manufacturers of motor-cars of a very high class, engaged in the construction of aircraft during the war with great success, and the present firm combines these two interests.

Major F. M. Green, who is in charge of design at the Armstrong-Whitworth works at Coventry, is among the pioneers of British Aviation. At the time of the foundation of this paper he was a prominent member of the engineering staff of the Royal Aircraft Factory (now R.A.E.), at Farnborough.

This firm is mainly notable for the work which it has steadily carried on in the past few years on the development of all-steel construction for aircraft. British steel construction is and always has been in quite a different category to the light alloy construction which has become so popular abroad. The inherent difficulties which are imposed by the choice of a dense high tensile material are enormous compared to those of construction in duralumin and therefore this work has involved an immense outlay on experimental work. This work has been carried on with such success that to-day the Armstrong-Siddeley works claim that they can build an all-steel aircraft not only lighter but actually cheaper than they could build a timber machine to carry to the same load and to have the same performance.

This work on metal construction has led the firm to extend their actual aircraft construction over a wide range of different types. Their best known type is the Siskin single-seat fighter, which has been made in various models.

One of these, the Siskin III, is in extensive use in the R.A.F., whereas Marks IV and V have been produced for foreign services and took a distinguished part in the 1925 King's Cup Race, the Siskin V finishing first and the Siskin IV second. They have also built two-seat fighters, of which the Ajax, which also started in the King's Cup Race, is the latest example, and troop carriers. At the present moment they are engaged on the all-steel Argosys, three-engined passenger carriers for the Air Ministry which are likely to prove very interesting among modern British aircraft.

A. V. ROE AND CO. LTD.

Although the firm of A. V. Roe and Co. Ltd. is not the oldest established of existing British Aircraft Firms it derives directly and without break from the activities of Mr. A. V. Roe, who, having built a full-sized aeroplane and flown on it as early as 1908, is unmistakably the pioneer of British aviation. Mr. Roe's early efforts to fly naturally did not greatly interest his own countrymen, and even after the general public recognition that flying was not merely the vain dream of a few fanatics, it was a good deal easier to obtain financial support for the production in this country of aircraft of foreign design than to give British inventors a fair chance of showing what they could do.

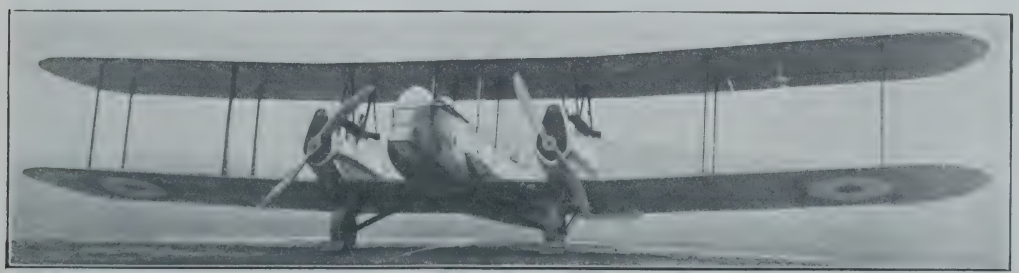
In 1911 when this paper first came into being, Mr. A. V. Roe was the lessee of a simple shed at Brooklands which contained one Avro Biplane (35 h.p. Green engine) and one "part worn" Henri Farman Box-kite. This represented the actual flying section of the Avro enterprise, and constituted the material equipment of the Avro Flying School.

Amongst those who were pupils and/or instructors at this school, there may be mentioned Mr. Howard Pixton—the winner of the 1914 Schneider Cup Race—the late Lt. Wilfred Parke, R.N., Mr. R. C. Kemp, and Mr. F. P. Raynham—the latter two happily still actively and usefully engaged in the development of practical flying. Despite the practical success which attended the school itself, it was kept going only as the result of very great pecuniary sacrifices on the part of its founder.

The constructional facilities at the disposal of Mr. Roe in those days were represented by a limited amount of floor space in the works of Everard and Co., of Manchester. Everard and Co. were concerned with the manufacture of such articles of masculine attire as webbing and belts, and particularly the famous "Bull's Eye Braces." This firm was under the control of Mr. H. V. Roe, who afforded the main financial support for his brother's enterprises, whence the contemporary jest that Avro biplanes were kept up in the air by Bull's Eye Braces.

Associated with Mr. H. V. Roe in Everard and Co. was Mr. John Lord—who is to-day far too well known in aviation circles to need description, and who has ever since been a very large factor in the success of the Avro firm.

As an indication that this side of the business was in similar financial straits to the Flying School, history records that Mr. Roe, finding the need for a technical assistant for



AN AVRO BOMBER OF TEN YEARS AGO.—The Avro Manchester Mk. II, with B.H.P. engines—a machine which would be modern to-day.

design work, advertised for such an assistant who would be content with the opportunity for gaining experience as his sole remuneration. Mr. R. J. Parrott—now in charge of the Avro Experimental Works at Hamble, answered the advertisement, and in 1911 was chief engineer at the Manchester works.

In the beginning of the year 1911 the Avro Works produced the first successful tractor biplane, which was fitted with a 35 h.p. Green engine. And later in the same year a similar machine bought and fitted with floats by Commander Schwann, R.N., successfully flew from the water at Barrow, and so was the first British seaplane.

Mr. Roe, however, persevered in the face of many difficulties, and by 1912 had been rewarded to the extent of becoming the first constructor to deliver an aeroplane of British design and construction to the British Government. Although this was by no means the end of his difficulties it may be considered the turning point in his career. The machines were the 50 h.p. Gnôme-engined Avros.

The original of the famous 504K type Avro was produced in 1913 and attracted widespread attention in the aeronautical world. Shortly after the outbreak of war orders for this type were received in considerable quantities, and the 504 type proved an extremely valuable machine at that early period. The bombing of Friedrichshafen, one of the most notable achievements of the beginning of the war, was carried out on this type. How the 504—after it had been superseded for active service by more powerful types—came into greater demand than ever as the standard training machine for the British Air Services is well known, as is also its enormous popularity as a general utility machine to-day.

The newest derivative from this type—the Gosport—seems likely to become as widely used as its predecessors.

It is impossible here to give any adequate account of the complete range of Avro activities to-day, but it may be said that their products of recent years have ranged from single-seater light aeroplanes with motor-cycle engines up to the 1,000 h.p. Napier-engined Aldershot bomber, and that they have produced machines of the very highest class throughout that range. It may be said that at present, over and above innumerable 504K type training machines, the R.A.F. has in service the following types of Avro machines :—Aldershot bomber (650 h.p. Rolls-Royce Condor), Bison fleet spotter (450 h.p. Napier Lion), and the Andover ambulance (650 h.p. Rolls-Royce Condor). Even more interesting Avro aeroplanes exist, but these are at present unmentionable, with the exception of the Avenger, a Napier-engined pursuit ship.

WM. BEARDMORE AND CO LTD.

This famous Scottish engineering firm have for long been deeply concerned in all branches of the Aircraft Industry, both directly and through their subsidiary companies. The first of their aeronautical activities dates from 1912, when they acquired the British rights in the D.F.W. machines of that date. Two of these machines were brought to this country and were extensively demonstrated with very successful results by Mr. Dukinfield Jones and the late Lt. C. H. Collet, R.M.L.I. It may be noted in passing that these machines used a very considerable amount of metal in the form of structural members even at this early date, and that to-day the Beardmore Aircraft works are busily engaged in producing all-metal aircraft.

Their second aeronautical venture was the production of aero-engines, which began in 1913 at the works of Arrol-Johnston Ltd., an associated company. The first Beardmore aero-engines were based on the 120 h.p. Austro Daimler, a six-cylinder vertical engine of remarkable efficiency and reliability. Mr. Cody's biplane—the winner of the British Military Trials of 1912—was fitted with an engine of this type, and subsequent events fully confirmed the wisdom displayed by Beardmores in acquiring the use of this design.

On the outbreak of war the Arrol-Johnston works were entirely diverted to the production of Beardmore Aero-Engines, more than 3,000 of which were produced before the Armistice.

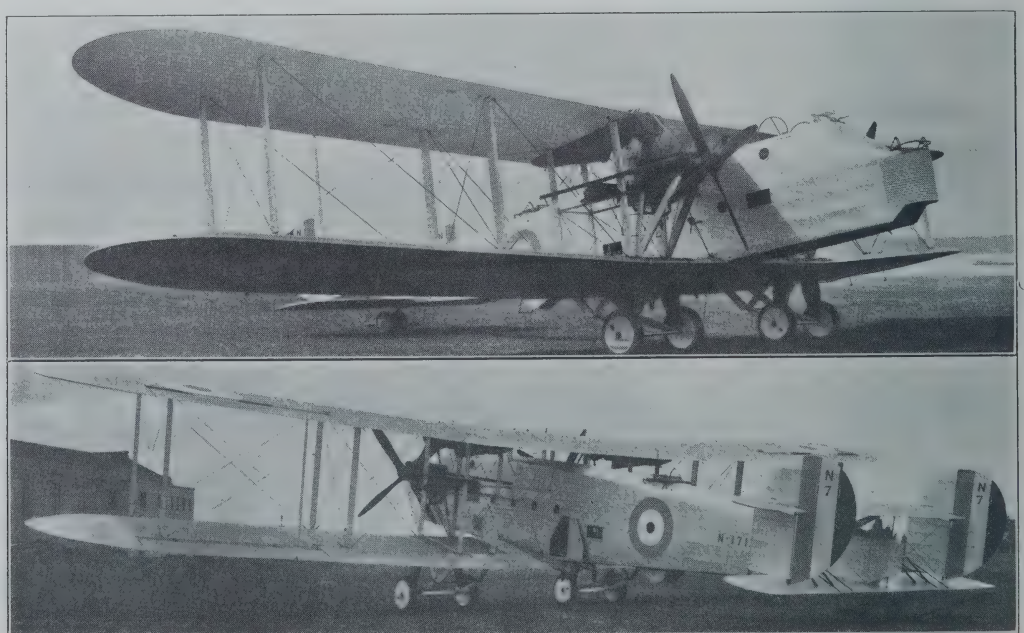
In 1915 the firm set up an aircraft design department of their own, with Mr. G. Tilghman Richards as designer, and from then on their aeroplane works produced 650 aeroplanes ranging from small single-seaters to four-engined bombers for the British Air Services.

In the same year the firm were asked by the Admiralty to undertake the construction of rigid airships, a task which involved the construction of an airship shed at Inchinnan, together with a village of over 50 houses to accommodate the workers. These works produced the R.24, R.27, R.34, and R.36.

R.34 was the first airship to cross the Atlantic, and so far the only airship to make a double trip between Europe and America. R.36 was the first airship designed and built in this country with proper accommodation for passengers on long-distance flights. This latter ship is still in existence, and is now being reconditioned for experimental work.

Another pioneer undertaking by Beardmores was the construction of H.M.S. *Argus*—the first important aircraft carrier ever produced. One ship—the *Ark Royal*—had previously been built to carry seaplanes, and several small ships of the cross-channel type had been adapted to this purpose, but the *Argus*, originally laid down as a liner for the Lloyd-Sabaudo Company, was the first ship of really large size to be made into an aircraft carrier in the modern sense of the term.

Since the war the Beardmore Aircraft works have done much experimental work on the design of all-metal aircraft, and at present are busily engaged in producing the now well known Inverness all-duralumin flying boats for the Air Ministry. In addition they have produced machines of the usual mixed timber and metal construction of which the well known Wee Bee light aeroplane and the Beardmore XXVI two-seat fighter are characteristic examples.



A MODERN AVRO.—The Ava (Rolls-Royce Condors), a night-bomber, and coastal-torpedo land-'plane.

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FOUR YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew across the SOUTH ATLANTIC (3,800 miles).
TWO YEARS AGO	Rolls-Royce Aero Engines in a Fairey Seaplane flew ROUND AUSTRALIA (9,800 miles).
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C.P.

In the aero-engine department the past few years have been devoted to development work of the first importance, the results of which are now beginning to be apparent. Their efforts have been devoted primarily to the production of a type suitable for commercial purposes, with the characteristics of simplicity, accessibility, low upkeep costs and extreme fuel economy. It is interesting to note that the new Beardmore engines, like the original types bearing that name, are of the vertical six-cylinder type.

The new Beardmore engines are of 800 h.p. at 1,200 r.p.m., weighing only 2¼ lb. per h.p., and, under the names Cyclone and Simoon, are available in either the normal or the inverted form. In addition, they can be adapted to burn heavy oil fuel of the cheapest grade—which represents not only an important economy, but a very greatly reduced risk of fire.

THE BLACKBURN AEROPLANE AND MOTOR CO. LTD.

Fifteen years ago the Blackburn Aeroplane and Motor Co. Ltd. did not exist, but Mr. Robert Blackburn, the founder and present head of the firm, was already a prominent figure in British Aviation. The son of an engineer and in training to follow in his father's footsteps, Mr. Blackburn happened to be in Paris at the beginning of 1909 and was so interested by an air meeting at Issy that he decided to try to build a machine of his own.

This intention was speedily fulfilled, for by April of that year he had designed, built and flown the first Blackburn aeroplane. The first and last flight of this machine was made on the sands at Saltburn, and ended in a side-slip caused by an effort to turn, but the fact that the machine flew, and that Mr. Blackburn himself was able to fly it at the first attempt, constituted a very decided success at that period.

Encouraged by this success, Mr. Blackburn designed and built a second machine which was completed in 1910. This machine was remarkably successful, and upon it the late Mr. B. C. Hucks took his ticket early in 1911. Two Blackburn monoplanes started in the 1911 Circuit of Britain for *The Daily Mail* prize of £10,000, and though both met with misfortune early in the race, they had already shown themselves excellent flying machines.

Later in the same year Mr. Hucks, on one of these machines, made a memorable tour in the West of England, making over 90 flights, and covering about 1,000 miles, in accordance with a pre-arranged programme which was carried out almost to the letter.

At about the same time an all-steel two-seater monoplane built by Mr. Blackburn made a successful appearance. This machine was designed for military service and was a really remarkable achievement for that period.

In common with the other constructors of that date, Mr. Blackburn received no material support from the British Government, and, despite his technical success, was continually hampered by financial difficulties. It was not until May, 1914, that he received a small order from the Government, and even that was for B.E.s and not for Blackburn machines. Nevertheless, on the strength of this beginning he took over the present Olympia Works at Leeds and formed the present company in June, 1914.

The outbreak of war two months later found the firm with a spacious factory site which was speedily fully occupied in the production of aircraft for the Admiralty. Before long the firm acquired a new factory at Brough, on the Humber, where, in addition to workshops, an aerodrome and seaplane base were formed.

The work of the firm during the War, 1914-18, covered a very wide range. They produced machines from the small single-seater to the large twin-engined bomber, both land machines and seaplanes, but they were mainly concerned with the production of aircraft for naval purposes, and an outstanding feature of their work was the development of the torpedo-carrying machine.

Since the war Blackburn's, like other aircraft firms, have again had to face a difficult period, but enterprise and determination have carried them through. Sticking to the problem of the torpedo-carrier, they produced in 1920 the now well-known Swift, which attracted the attention of both British and foreign Governments.

The Dart, a modified Swift, was adopted by the R.A.F. as the standard torpedo plane and was ordered in large quantities. In addition, Swifts were supplied to several foreign navies.

These machines were followed by the Blackburn fleet spotter, a type having many qualities in common with the torpedo machines, which has also been very successful and extensively used.

The Cubaroo, fitted with the 1,000 h.p. Napier Cub engine, is another Blackburn machine and the largest single-engined aeroplane yet built. It is also a torpedo carrier, and is remarkable for its controllability.

The Velos, a two-seater torpedo machine, and the Sprat, a two-seater advanced training machine, both of them described in this paper quite recently, are the most modern of Blackburn aeroplanes which it is yet permissible to describe. Others which will fully maintain the firm's reputation are in being, but must not be mentioned, though most people now know that the Airedale is a single-engined fleet spotter and that the Iris is a huge flying-boat with three Condor engines.

BOULTON AND PAUL LTD.

Although Boulton and Paul Ltd. only entered the Aircraft Industry during the war they may nevertheless be numbered among the pioneers of British Aviation. The firm itself held an established place in the Structural Engineering Industry long before aviation existed, and naturally their aeronautical work has benefited by that fact.

They are among the small number of firms who have steadily attacked the problems of the metal construction of aeroplanes and who have developed this branch of aeronautical engineering to its present effective and practical state in this country.

Their aeronautical work is under the direction of Mr. J. D. North, and it is interesting to recollect that Mr. North, who was then very young, first attracted public attention in 1911 by winning a small prize offered by The Aeroplane for the best set of answers to a series of questions on practical problems of flying. The nature of these answers moved the Editor to an expression of opinion concerning Mr. North's abilities which have been abundantly justified.

The work of developing the present British type of all-steel construction, now so successfully used by Boulton and Paul, involved an enormous amount of experiment and re-



THE FIRST-BORN.—The first appearance of the first Blackburn torpedo carrier (Napier Lion engine) built in Greece. The Royal Greek Naval Aircraft Factory, in which it was built, was organised by the Blackburn Company. It employs over 300 hands, including a nucleus from the Blackburn Works, and in a short time should be capable of producing four or five machines a week. Every part of the machine in the photograph was constructed in the Factory at Athens, excepting, of course, the engine, which was built at the Napier Works at Acton. This first trial was made in the presence of a large gathering, including General Pangalos, the President of the Greek Republic, Madame Pangalos, who christened the machine, the President of the Committee of Aerial Defence and most of the Foreign Ministers. In its first flight this machine was piloted by Colonel the Master of Sempill, who had a Greek Naval Officer with him as passenger. All the test flights were made with more than the full military load and the performance exceeded expectations.

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Dual Control.

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"MOTH"

Engine: 27-60 h.p. "CIRRUS."



"Flight" Photograph.

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upon services of national importance.

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search which the firm faced in the same spirit as that which animated the earlier pioneers of practical aeronautics, and their efforts have been rewarded by a very high degree of practical success.

The nature of the difficulties which have had to be overcome in this process are known and obvious, and on more than one occasion THE AEROPLANE has given some account of the details of Boulton and Paul construction.

Their work in this direction has been largely in the nature of research of the most intricate and costly character, and their actual production of finished steel aircraft is far from being a measure of the total work which the firm have carried out.

Since the end of the war these Boulton and Paul aircraft have practically all been of the high-performance twin-engined, day-bomber type, and the successive versions of this type—though by no means of uniform aerodynamic design—have actually represented a greater progress in structural design and technique than is apparent from the outside. This fact would be very clearly shown were it possible to give figures showing the performance, the ratio of useful load to total weight, and the useful load per h.p. of recent machines of their design. Unfortunately this information cannot yet be divulged.

The Boulton and Paul Bugle (Mk. I) was recently described in some detail in this paper. The Mark II differs from the Bugle Mark I mainly in the fitting of two Napier Lion engines, in place of the Bristol Jupiter of the Mark I. Unfortunately, it is not yet possible to give any more detailed account of this type—but all those who witnessed the performance of the Mark I at the R.A.F. Display last year will realise that the Bugles of both types are not merely essays in structural design, but are amazingly good aeroplanes in every way.

THE BRISTOL AEROPLANE CO.

Founded in 1910, as the British and Colonial Aeroplane Co., Ltd., by the late Sir George White, the Bristol Co. may be considered to be the first firm of British aircraft constructors to have started their career with adequate financial resources.

In 1911 when THE AEROPLANE started the firm had not only a thoroughly equipped aircraft factory at Filton, near Bristol, but it was operating very successful flying schools at Lark Hill (Salisbury Plain) and Brooklands, both entirely equipped with Bristol aeroplanes and staffed mainly by Bristol-trained pilots. It would be difficult adequately to assess the value to the nation at the outbreak of war in 1914 of the existence both of the Bristol Works and of their flying schools.

Their outstanding achievement during the War itself was the production of the famous Bristol Fighter. This machine—designed by Capt. F. S. Barnwell, who is still in the firm's service—fitted with the Rolls-Royce Falcon, was not merely among the finest aeroplanes produced in those years of rapid development, but it may almost be said to have inaugurated a new phase in the art of aerial warfare—for the Fighter was the first machine put into service in any large number which could carry out long-distance reconnaissance work, but was yet possessed of sufficient speed and manœuvrability to defend itself against attack by single-seaters. The Bristol Fighter is still the standard Service machine of its type in the R.A.F. Although a good many machines have been designed during the past few years as "Bristol Fighter Replacements," none has yet been found sufficiently worthy to supplant it.

To-day the Bristol Aeroplane Works are still at Filton, where there are to be found also the Bristol engine works and the new Bristol Flying School, busily engaged in training officers of the R.A.F. Reserve.

Of recently produced Bristol aeroplanes, the Bloodhound has lately been prominently before the public eye as the aeroplane used in connection with a striking demonstration of the qualities of the Bristol Jupiter Mark VI aero-engine. It should not be overlooked that although this was essentially an engine demonstration, a very high standard of reliability and robustness on the part of the Bloodhound was necessary for the completion, without incident, of over 25,000 miles of flying.

Also it may be remarked that the Bloodhound is a very fine example of modern metal construction. For some considerable time the Bristol Company have been wholeheartedly engaged in the development of metal construction, their works are thoroughly equipped for this class of work, and to-day they are able to produce all-metal aeroplanes which in design, workmanship and performance stand in the very first rank.

Over and above the building of aircraft, the Bristol Company have, for the past five years, undertaken the production of air-cooled radial engines, with well-known success.

The Bristol engine works may justly claim to lead the World in the production of air-cooled aero-engines. Those who during the past few years have watched the steady progress of the Bristol Jupiter engine may, from the very steadiness of that progress, easily have overlooked the almost revolutionary change which has actually occurred.

Five or six years ago the air-cooled radial engine of high power was still very much in the shadow cast by the grave failure of certain attempts to produce such engines during the War 1914-18. Despite the obvious advantages of the type the practical difficulties of producing a reliable and long-lived radial engines were considerable, and a very large volume of authoritative opinion was gravely sceptical as to the possibility



ARMY CO-OPERATION.—A Bristol Fighter, with Rolls-Royce engine (for nearly ten years the stand-by of the British Army), picking up a message. This act will be one of the features of the 1926 R.A.F. Display.

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BLACKBURN GUNNERY FLEET SPOTTER SEAPLANE.

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of an engine of this type competing on level terms with the standard water-cooled type except in the case of low-powered units.

To-day, thanks very largely to the Jupiter, there can be no room for scepticism. The Jupiter has shown itself to be at the least as reliable as the best of water-cooled types. It is appreciably lighter than any water-cooled engine of similar power-output. It can hold its own in the matter of fuel and oil consumption with any modern aero-engine. And it is pretty certainly the most widely used aero-engine of 400 h.p. or thereabouts in the World to-day.

The latest of the Jupiter series—the Mark VI—represents a very great advance over the earlier engines of the same name, and its performances, both in the officially observed endurance test of 225 hours' flying in the Bloodhound and under normal service conditions are sufficiently well known to need no more than passing reference. Nevertheless the Bristol Company have no intention of resting upon this achievement, but are already well forward with the design and construction of a still more advanced type of engine.

The other Bristol engines—the Lucifer of 125 h.p. and the Cherub engine for light aeroplanes, though naturally less widely used than the Jupiter, have in no way failed to maintain the Bristol reputation. The Lucifer is in use not only in this country, but also in Germany, Sweden, Norway, Russia, Spain, Hungary, Bulgaria, Chile, The Argentine, Japan and China, and is giving satisfactory service in all.

The uniform success of the Cherub—which has been the power-plant of practically every prize-winning light aeroplane at meetings in this country, and has taken prizes at every contest in which it has been entered abroad—is sufficient proof of its merits.

THE FAIREY AVIATION CO. LTD.

Although in a corporate capacity this firm did not come into existence until a few years after The Aeroplane, its aeronautical origins can be traced back to well before 1911. Mr. C. R. Fairey, the Founder, Chairman and Managing Director, was trained as an engineer and was very early interested in the engineering aspects of the aeroplane.

At least as early as 1909 he had given a good deal of consideration to the problems of stability and had achieved certain very interesting results with models. When The Aeroplane came into being Mr. Fairey was associated with Lieut. Dunne in the Blair Athol Syndicate, which was then building inherently stable aeroplanes at Eastchurch. And in the next year he was manager of that firm.

In 1913 he joined the Short Bros. at Eastchurch as chief engineer at a period when the practical development of aeroplanes, and more particularly seaplanes, for naval purposes, was in a stage of very rapid development.

He left to form his present firm during 1915.

In addition to Mr. Fairey's own long connection with aviation in this country, a number of other members of the managerial staff of his firm have a remarkably direct association with the earliest phases of British aviation. In particular may be mentioned Lt.-Col. Vincent Nicholl, D.S.O., D.S.C., Mr. F. G. T. Dawson, both on the board of directors, and Sq. Ldr. M. E. A. Wright, who holds an important position on the staff.

Long before the outbreak of war, these three, then undergraduates together at Cambridge, were well known to the regular inhabitants of Brooklands and Eastchurch as constant and deeply-interested visitors whose chief object in life was to somehow or other to get into Aviation. The War gave them the desired opportunity and all three joined the R.N.A.S at the outbreak of war, and qualified together as pilots within a very short time at the Eastbourne Aerodrome. They all served with marked distinction in the R.N.A.S. during the War. Mr. Dawson was invalided out after hard service in the Mediterranean and joined the Fairey Co. soon afterwards. Col. Nicholl became famous for his command of the Yarmouth Air Station, resigning soon after the Armistice. And Sq. Ldr. Wright, after doing particularly fine work in the near East, developed technical leanings, and remained till quite recently in the service of the Air Ministry, endeavouring to impart practical common sense to the official experts. They have now joined forces with their old friend, Mr. Fairey, to carry on with unabated enthusiasm the work to which they put their hands so long ago.

The Fairey Aviation Company is to-day one of the leading aircraft contractors to the British Air Ministry, and have also obtained important orders from various foreign governments. Of the many types of aircraft which this firm have in service with the R.A.F., best known perhaps is the Fairey III D. seaplane, which type has many notable achievements to its credit. The award of the Britannia Trophy to Wing Cdr. Goble for his flight round Australia in 1924 is due to one of them.

The flight from Cairo to the Cape and back by officers of the R.A.F., which has recently been completed was made on four land machines of the same type with Napier Lion Engines, and the extension of the same flight from Cairo to London was done on the same machines equipped with floats.

The Fawn, a two-seat bomber, and the Flycatcher, a single-seat fighter used mainly by the Fleet Air Arm, are also in extensive use by the R.A.F.

In 1924 the firm produced on their own initiative the famous Fairey Fox. This was a two-seater bomber to carry the same load as the Fawn, but instead of being designed and built to official specifications it was designed in accordance with the firm's own conception of what such a machine should be. Its performance when completed was so far in advance of any machine of its class previously built in this country that despite its nonconformity with official ideas, the Air Ministry could not refrain from placing a substantial order for the type.

A later machine, also produced without serious consideration of official prejudices, the Fairey Firefly, is now in existence, but may not be described. It bids fair however to be as successful as the Fox, and it is believed to be the fastest single-seat fighter in the World.

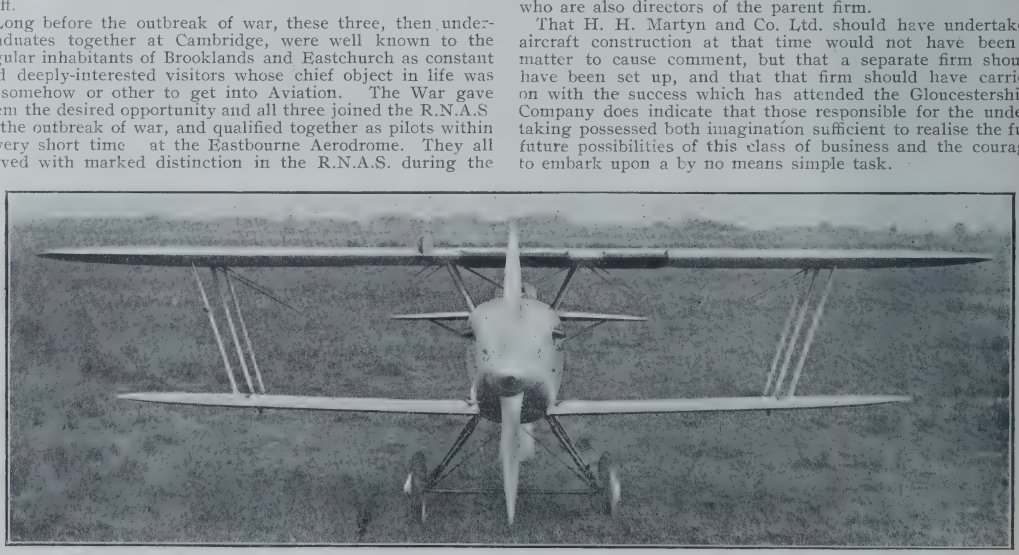
In addition to the design and manufacture of complete aircraft, the Fairey Aviation Company are also producing the Fairey Reed all-metal airscrew. Apart from being more durable than the all-wood airscrew, the aerodynamical efficiency of this type is proved by the fact that it now holds almost all the world's records, including the World's speed record.

Fairey Reed airscrews have shown very marked increase in performance on practically all the machines to which they have been fitted, and quite a number of orders have been received for them from all nations which profess to have modern aircraft.

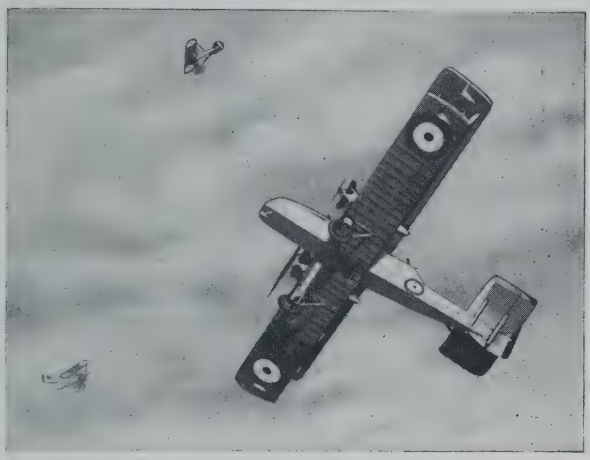
THE GLOUCESTERSHIRE AIRCRAFT CO. LTD.

The Gloucestershire Aircraft Co. Ltd. was formed in 1915, as an off-shoot from the well-known Cheltenham firm of H. H. Martyn and Co. Ltd., and is now under the joint managing-directorship of Mr. A. W. Martyn and Mr. David Longden, who are also directors of the parent firm.

That H. H. Martyn and Co. Ltd. should have undertaken aircraft construction at that time would not have been a matter to cause comment, but that a separate firm should have been set up, and that that firm should have carried on with the success which has attended the Gloucestershire Company does indicate that those responsible for the undertaking possessed both imagination sufficient to realise the full future possibilities of this class of business and the courage to embark upon a by no means simple task.



SPEED.—A front view of the Fairey Firefly (Curtiss D. 12 engine), which is believed to be the World's fastest fighter.



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The test of their enterprise came when the impetus of the War was removed and aircraft undertakings were thrown back on their own resources in an open market glutted with war-surplus material. The Gloucestershire Aircraft Company at this time secured the services of Mr. H. P. Folland, as their designer, and launched out with a policy of their own for the development of high-speed aircraft. Mr. Folland, who had worked with Capt. de Havilland at the Royal Aircraft Factory in its early days, and had imbibed the D.H. ideas, is the Gloucester Co.'s link with the beginnings of Aviation.

It had already become evident during the War that the functions of the high-speed scout were of supreme importance in aerial military operations.

Their first independent product was the famous Bamel racer, which won the 1921 Aerial Derby at a speed of over 160 m.p.h., in the course of what can only be described as a trial flight—for the machine was not actually completed until an hour or so before it started in that race. The Bamel has since made British speed records of 196.6 and in a modified form, of 212.15 m.p.h.

The Bamel won not only the 1921 but the 1922, and, in its modified form, the 1923 Aerial Derby, the latter at a speed of 192.4 m.p.h.

This is not the firm's only racing craft. In 1924, the Gloster III seaplane, fitted with a Napier Lion engine, represented Great Britain in the race for the Schneider Cup and finished second at a speed of practically 200 m.p.h. Another seaplane, based on their earlier racers, is even now under construction as part of an officially-supported scheme of research into high speeds.

As might be expected from their racing achievements, the firm has proved extremely successful in the design and manufacture of high-performance military machines.

A very large number of single-seat fighters, including the Mars VI and the Grebe types, both with Armstrong-Siddeley Jaguar engines, have been supplied to the R.A.F., and in addition a large number of single-seat fighters and of advanced training types of their make and design, have been supplied to various foreign Powers.

The Gamecock, a still more recent high-speed fighter with the Bristol Jupiter VI engine, has recently been adopted as a standard service type by the R.A.F.

The firm have recently undertaken all-steel production and are now ready to produce machines in either metal or wooden form. Their latest product, the Gorcock, with a Napier engine, will be seen at the R.A.F. Display.

HANDLEY PAGE LTD.

When The Aeroplane began its career in 1911, Handley Page Ltd., Aeronautical Engineers, had already two years of corporate existence behind them and is thus probably the oldest of purely aeroplane manufacturing companies now in existence. The Handley Page monoplane of that time (affectionately known as the "Yellow Peril") was of a remarkably advanced design, and for its day of surprisingly good performance. Since then the firm has retained a leading position in the Aircraft World and has worthily maintained the promise of its earliest achievements.

To a very large extent the history of Handley Page Ltd. is a history of attempts—very successful attempts—to overcome the many physical obstacles which are met in the effort to produce very large aircraft. But no attempt is made here to deal with the sixteen years of crowded history involved in the firm's existence.

It is sufficient to recall the twin-engined 0/400 bomber of war time, which confounded certain experts who had proved that no aeroplane of that size and weight could possibly be made to leave the earth, and survived as a useful commercial passenger carrier in civil service until quite recently.

Of their more recent products, the W.8b, a twin-engined commercial machine which has a reputation for reliability and comfort on the British Air Lines, and the W.8f, a three-engined version of very similar type, did much to demonstrate the practical value of the multi-engined machine for civil service.

These two machines have now been succeeded by the W.9, or Hampstead, fitted with three Jaguar engines of 400 h.p. each, and the W.10, with two Napier Lions of 450 h.p. Both of these types are in regular service on Imperial Airways with satisfactory results.

The machines above mentioned are all of them of perfectly normal though unusually well executed design. If the firm's reputation rested upon these products alone that reputation would stand high, but the Handley Page slotted-wing, although it is still in process of development, bids fair in the near future to overshadow all their other achievements.

The Slotted-Wing was originally the result of a quest for methods of increasing the lift of the usual type of wing and so making it possible to combine a heavy wing loading with a low landing speed, which is, practically speaking, the problem which has to be faced in the design of large but efficient aircraft. It may be said that the possibilities of the slot-wing in this direction alone have probably not yet been fully recognised and certainly have not been fully exploited.

It is, however, in the application of slots and flaps to the lateral control of aircraft at low speeds that the invention promises to produce its most valuable results.

That a very valuable extension of control is possible by the use of slots has been conclusively shown—after serious delays—by the R.A.E., and it is good to know that the firm originally responsible for the invention of slots has now been commissioned by the Air Ministry to construct an aeroplane in which an attempt can be made to utilise them to the best advantage.

Naturally this machine may not be described, but it is known to all foreign Air Authorities that deck-landing tests, with full war load of torpedo and all possible and impossible gadgets, have shown that a big machine can be put down practically at a stand-still on a slow-moving aircraft carrier, and that the same machine can leave the deck with a run of a very few feet.

THE DE HAVILLAND AIRCRAFT CO. LTD.

Fifteen years ago there was no de Havilland Aircraft Co. Nevertheless one number of the first volume of The Aeroplane records the arrival at Salisbury Plain of Mr. Geoffrey de Havilland, of the Balloon Factory (afterwards Royal Aircraft Factory, now R.A.E.), on his own-made box-kite in the process of qualifying for his superior brevêt. The Balloon Factory of those days was as little popular with The Aeroplane and vice-versa as was the R.A.F. in the early days of the war, consequently Mr. de Havilland's early efforts did not figure in it as prominently as they might otherwise have done, even allowing for Mr. de Havilland's natural modesty.

Mr. de Havilland, who later became Capt. de Havilland, R.F.C., remained at the Farnborough establishment until 1914, and was almost entirely responsible for the design of the B.E. biplanes—which, whatever may later have been their



THE SLOTTED WING.—The Handley Page Hendon two-seater torpedo carrier (Napier Lion), with slots open.

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unsuitability as Service aircraft, were at the time of their design most amazingly efficient flying machines.

In 1912 the Aircraft Manufacturing Co. Ltd. was established at Hendon by Mr. G. Holt Thomas. In 1914 this firm secured the services of Capt. de Havilland as their chief designer, and throughout the War the aeroplanes designed by him and produced in enormous numbers by the Aircraft Manufacturing Co., as well as by numerous sub-contractors, formed a very large proportion of the total British output of military aircraft.

The D.H.1—a two-seater pusher with a Renault engine—appeared just before the outbreak of war. It was followed by a modified machine of the same type with a 120 h.p. Beardmore engine which attained a speed of nearly 90 m.p.h., and the D.H.2, a single-seat pusher of still higher speed.

The D.H.3 was a large twin-engined type which was eventually developed into the D.H.10—specimens of which have been in service until very recently.

In 1916 appeared the famous D.H.4—a two-seater reconnaissance and light bomber machine with a powerful armament. It had a performance equal to that of most of the single-seat fighters of that time, and was a good deal faster than any of our two-seaters to-day.

This type and the D.H.9—which was really a rearrangement of the 4—have a war record which has been equalled by no other types. Both of them are still in extensive service—the 4 in the U.S. Army Air Service and the 9a in the R.A.F.

At the end of the War, 1914-18, the Aircraft Manufacturing Co. converted a number of machines of the 4 type to passenger-carrying purposes, and later produced the D.H.16 and D.H.18 for use on the London—Paris Service of Air Transport and Travel Ltd.

The scale to which the Aircraft Manufacturing Co. had grown during the War was, however, far too large for the conditions of peace, and the firm encountered serious financial difficulties, and in 1920 it went into liquidation. In the same year the de Havilland Aircraft Co. Ltd. was founded.

From the beginning of its career the firm has given a very large share of its attention to the development of civil types of aircraft. In 1921 they produced the famous D.H.18 and D.H.34, and in the following year the London—Paris service (then operated by Daimler Hire Ltd.) was carried on entirely by this type, while others were in the service of the Instone Air Line to Cologne. The D.H.34 gave exceedingly satisfactory service both to these two lines and to Imperial Airways.

Machines of this type were in regular use until Mar. 30, 1926, when they were superseded, not because they were in any sense the worse for wear or age, but as a result of the decision to use only multi-engined machines for the Continental services.

The next outstanding success was the D.H.50, a four-passenger machine with a Puma engine, suitable for either hire service, or for air lines having a light traffic. In 1923 the D.H.50, in the face of international competition, won the first prize in a contest for commercial efficiency at Gothenburg, and the type has been adopted for the regular services of the Queensland and Northern Territories Air Line, the Western Australian Air Line, and the Larkin Aircraft Supply Co.'s Line in Australia.

D.H.50s were used by Imperial Airways for the service to Berlin at a time when the German restrictions would not permit the use in Germany of their larger types. Several of them are in the service of the Australian Air Board, and machines of the type are being built or have been built under license in Australia, in Belgium (for use in the Congo) and in Czecho-Slovakia, where they will be used by the State Air Lines, and, as is well known, the great demonstration flights, notably those to India and to South Africa by Mr. Cobham, have been made on a D.H.50.

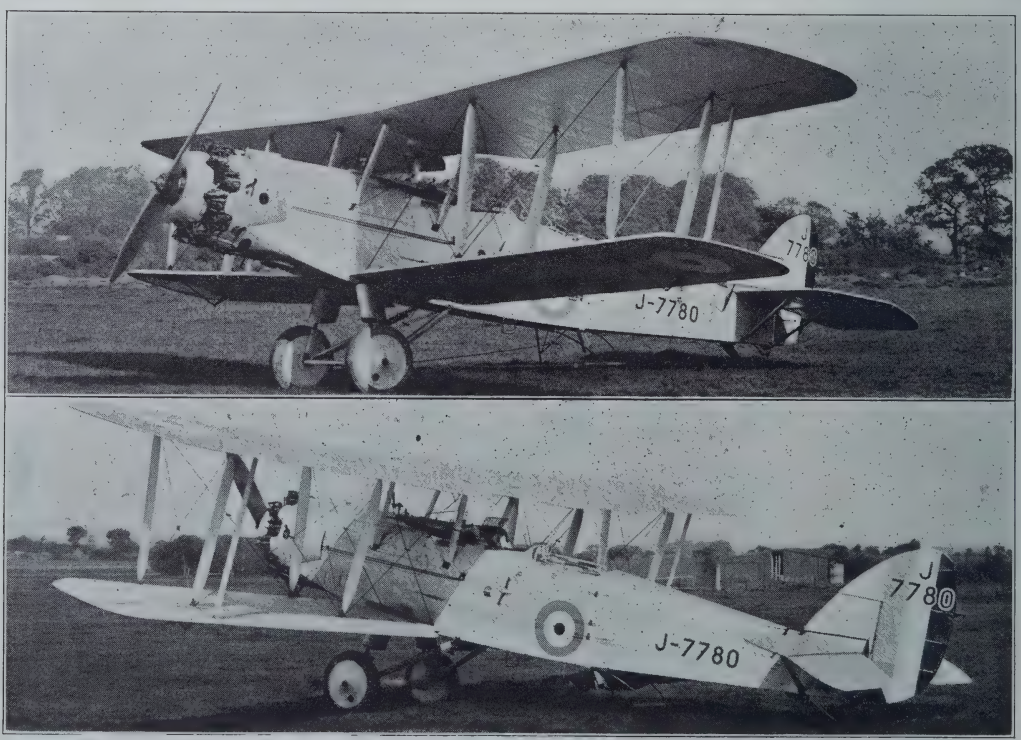
At the present moment the firm are constructing five machines to the order of Imperial Airways for the Cairo-Karachi service. These are known as the D.H.66, and are to be fitted with three Jupiter engines.

Apart from aircraft for commercial purposes, the firm have very signally contributed to the development of private flying by the production of aeroplanes of a suitable type. Their first attempt in this direction was the construction of the D.H.37—better known as *Sylvia*—for Mr. Alan Butler, in 1922. This machine was of a type suitable either for the well-to-do private owner or for business use, and has done excellent work in both categories.

In 1923 they produced the D.H.51, an economical two-seater with the 80 h.p. Renault or the 90 h.p. R.A.F. engine, and for the Light Aeroplane Competition of that year the D.H.53, which is one of the best all-round light aeroplanes yet produced, and is of a type which may yet come into favour if the sporting side of flying develops to any extent in the next few years.

The production early in 1925 of the D.H.60, or Moth, was an event which placed the problem of private flying on an entirely new basis. The Moth is the first two-seater aeroplane with a really good performance, and an adequate reserve of power, which is robust enough, compact enough, and simple enough to be flown and maintained by any ordinarily intelligent owner-pilot, and which can be sold at a price comparable to that of a good class motor-car.

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machine, and it is not too much to say that the very great success of the various Flying Clubs in this country has been due to an enormous extent on the qualities of the Moth. At the moment there are six of these Clubs in existence, all teaching members to fly on Moths, and affording their members some opportunities for co-operative flying on the Club machines.

Already Club pupils have shown that they are not content with co-operative flying and several of them are the owners of private Moths. Altogether well over fifty Moths have been built and sold in the last twelve months, and there are very marked signs that the demand for machines of this class will increase rapidly as the number of pilots turned out by the Clubs increase.

Space does not permit of any more exhaustive account of the de Havilland products, which also include military aircraft worthy of the designers' war-time reputation, but enough has been said to indicate the value to aviation generally of their work.

THE H.G. HAWKER ENGINEERING CO. LTD.

The Hawker concern was formed in January, 1921, from the nucleus of the old Sopwith Aviation Co., and the affairs and aims of both companies are so intimately connected that for the purpose of recording progress in Aviation their history may be regarded jointly.

Mr. Sopwith began flying in 1910 (his certificate being No. 31 on the register of the Royal Aero Club), and won the Baron de Forest prize for a flight to Belgium, over 160 miles, on a Howard Wright biplane in December, 1910. He was thus a pilot of international reputation when this journal was founded.

For two years he flew in this country and America with unbroken success, and with few broken aeroplanes, and in 1912, in conjunction with Mr. F. Sigrist, began on aeroplane design and construction at Brooklands. From the very first the Sopwith machines were conspicuously successful, a wonderful tribute to the far-sightedness and organising ability of the men who started in those early days.

It is interesting to record that over sixty different types of machines were designed and constructed by the Sopwith Company. And during the War, 1914-18, more than 12,000 Sopwith machines were manufactured.

One of the earliest machines, and, incidentally, one of the most striking, was the Tabloid biplane, designed by Mr. Fred Sigrist. This had, beyond all question, an epoch-making influence on aeronautical design. At that time monoplanes were at the height of their popularity. But the Tabloid easily beat all its rivals in speed. And, what was far more important, it possessed a wide speed range. It could fly at anything between 35 and 93 miles per hour, and in this respect, was far ahead of its contemporaries.

The Schneider Trophy winner of 1914, with an 80 h.p. engine, which afterwards became famous as the Sopwith Baby seaplane, was another design of outstanding merit, and was supplied in large numbers to the Admiralty.

The Sopwith Co. also built the first amphibian flying boat—with a Saunders hull—and the famous Bat-boats, one with a 200 h.p. engine, the biggest of pre-war flying boats.

The names of the Sopwith types which have figured prominently in air war are so familiar that it is almost unnecessary to recapitulate them at length, but the One-and-a-half-Strutter, the Pup, the Triplane, the Camel, the Cuckoo, the Dolphin, the Snipe, the Salamander, the Buffalo, and the Dragon, each with their own special excellences, deserve mention.

After the Armistice, the Sopwith Company built the Atlantic machine on which the late Mr. H. G. Hawker made a gallant and memorable attempt to fly from Newfoundland to Brooklands. Also they produced the Dove and the Gnu machines for joy-riders, and the Antelope, a commercial machine, which won the second prize in the Martlesham trials for that class of aeroplane, and is now in use in Australia.

The firm then concentrated on the manufacture of motor-cycles, and, following the slump of 1920, when the Sopwith Co., as such, went into voluntary liquidation—*and* paid all its creditors 20s. in the £,—the H. G. Hawker Engineering Co. Ltd. was formed, and immediately turned their attention to the aircraft side.

Their first product, the Duiker, was an experimental two-seater reconnaissance monoplane, but the type, although successful, was not reproduced. The Woodcock, a single-seat night-fighter, with the Jupiter engine, was the next type. This machine was put into quantity production, and is now used by R.A.F. squadrons. Its performance, particularly in the matter of speed range, makes it eminently suitable for night-flying.

The Hedgehog, a three-seater fleet-reconnaissance machine, with a Jupiter engine, was the next experimental type. This machine carries a big load, and its performance is most impressive. There is ample accommodation for the pilot and crew, and the landing speed is extremely low.

The Horsley day-bomber, with Rolls-Royce Condor engine, followed. This machine is now in production as the standard day-bomber for the R.A.F. It is so well proportioned that in the air it not only appears like, but can actually be handled as easily as, a fighting scout.

Apart from machines on the secret list, the latest effort of the Hawker Co. is the Heron, a metal-framed fighter, with the Jupiter Mark VI engine. This product has been aptly described as "our simplest aeroplane," and certainly the particular method of construction used seems to warrant this description. High tensile steel strip, with its high initial cost, and expensive working processes, has been eliminated, and replaced by a system of tubular construction, evolved by Mr. Sigrist. The gain from the mass production point of view is enormous and the structural weight and performance, which incidentally includes an astounding rate of climb, are unimpaired.

Abroad the Company have been very successful with a single-seater fighter supplied to the Royal Danish Navy. This machine, somewhat on Woodcock lines, but fitted with a Jaguar Mk. IV engine, is known as the Danecock, and has been very much appreciated in Denmark. Its performance is in excess of expectation, and the firm enhanced their reputation for quick production by delivering two months before the stipulated date.

In addition to military machines, the firm produced a quite successful light aeroplane, the Cygnet. This was easily the lightest machine in the 1924 competition, and had not Mr. Raynham had engine trouble on the last lap would have won the first prize. Last year, the same machine, piloted by Flt. Lt. P. W. S. Bulman, won the International Handicap at Lympne, and was second in the Height Contest.

It is hoped that one of the new Hawker "Hush-hush" machines, the Hornbill, with a Condor engine, will be on view at the R.A.F. Display, but at present it is still on the Secret List.

D. NAPIER AND SON LTD.

When The Aeroplane was founded fifteen years ago, D. Napier and Son had already been in existence for over a century. And it is probable that to the firm at that period events in the world of aeronautics were affairs of only minor interest. The firm had been in existence for ninety years before it embarked on the production of motor-cars. Before that they had manufactured bank-note printing machinery, gun-finishing machinery, coin-weighing machinery, and similar engineering products of high precision.

This experience of highly-accurate work stood them in good stead when they entered the Automobile Industry, and Napier cars in the early days of motoring did much to uphold the prestige of Britain in this branch of engineering. Napiers incidentally were the first firm in the World to manufacture a six-cylinder car and a Napier is the only British car that has ever won the Gordon-Bennett Trophy.

Thus when this paper first came into being, Napiers were generally well known in aviation circles as leaders in the allied but vastly more prosperous community of motoring, and there are those of the 1911 Brooklands colony still active in the Aircraft Industry who will remember a huge Napier of 100 h.p., known as Samson, which was then being driven by the late "Jimmy" Valentine, and of their own efforts to aid in starting it.

During the War, 1914-18, the Napier works were naturally diverted to the manufacture of aero-engines, and very large numbers were produced. It was not, however, until quite late in the war that the firm's desire to produce engines to their own design met with the approval of the Authorities, with the result that in 1918 the first Napier Lion engine made its appearance. The success of that engine was almost unparalleled, for one can remember no extensive period of teething trouble such as have almost invariably attended the introduction of a new type of engine, particularly of such high power.

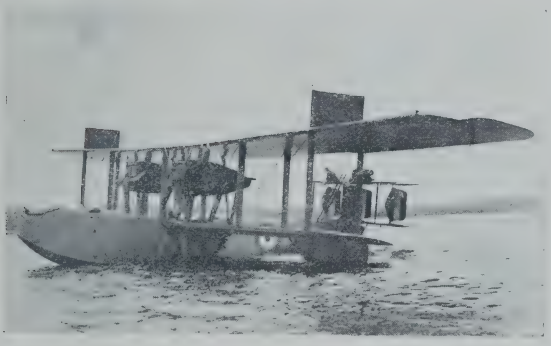
To-day the position of the firm is almost precisely the reverse of what it was fifteen years ago. Its primary occupation is with the production of aero-engines, and motor-cars are a subject of minor interest. The Napier Lion engine has a universal reputation, even greater than had Napier cars fifteen years ago, and this reputation is based on performances in all spheres of Aviation—Military, Commercial and Sporting.

The first Lion on one of its very first flights took a D.H.9 to 30,500 ft. Napier engines have helped to make all the British speed records, including the World's Seaplane Speed Record set up last year by the Supermarine S.4, and in the service of Imperial Airways these engines have flown well over 2,000,000 miles.

The recent flight by Commandante Franco from Spain to South America, and the R.A.F. Cairo—Cape Town and back to England flight, was made by four of these engines, none of which required even a top overhaul in the total distance of 14,000 miles.

The most powerful aero-engine in the World—the Napier Cub of 1,000 h.p.—has so far not had scope for use on any

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WE shall gladly give our advice for its use in any other direction—it is largely used for motor car bodies, boat hulls, interior panels, etc., and can be supplied in lengths up to 60 feet by 8 feet in width.

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S.E.SAUNDERS Limited

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scale comparable to that of the Lion. It has, however, shown that it possesses qualities of reliability equal to those of its predecessor, and is likely to play a large part in the development of aeroplanes of higher power than are common to-day.

Other Napier engines of the most advanced type are in process of development, but unfortunately may not yet be mentioned except in hushed tones.

GEORGE PARNALL AND CO.

Parnall and Sons, of Bristol, a famous Bristol firm of cabinet makers, undertook the construction of aircraft on a very large scale during the war, and with that enterprise which has always distinguished Bristol, acquired the services of Mr. H. Bolas, as a designer, and undertook original design with considerable success. After the Armistice the original firm found ample work in its original line to keep it busy, but Mr. G. C. Parnall, foreseeing the future importance of aircraft, founded the firm of George Parnall and Co., to carry on the business of aircraft designers and constructors.

The firm has ben concerned mainly with the production of aircraft for service under naval conditions. The first Parnall-designed aircraft was a ship's fighter, known as the Panther, which was designed and built before the Armistice and has been produced in some quantity. Some Panthers are, it is believed, still in service, and, despite the period which has elapsed since their original conception, are extremely useful machines.

Since the formation of the present firm, there have been produced successively, the Parnall Puffin, a single-float amphibian two-seater for naval reconnaissance purposes (Napier Lion engine), and the Parnall Plover, a single-seat ship's fighter, which can be fitted with either a twin-float amphibian undercarriage, or a wheeled undercarriage. This machine can be fitted either with an Armstrong-Siddeley Jaguar or a Bristol Jupiter engine.

Both these machines have proved to possess an excellent performance, and display a combination of ingenuity in design and excellence of workmanship, of the very highest standard.

Another very interesting production is the experimental Possum triplane. This machine carries a single Napier Lion engine in the fuselage. A special gear box, built onto the engine, drives a pair of cross-shafts, one on each side, and through bevel gears each of these shafts drives an airscrew. The cross-shafts, their bevel gears, and the airscrew shaft, are built into the centre wing. The machine is essentially a test of the central engine room arrangement for aircraft, an arrangement whose many attractions have so far been overshadowed by the transmission difficulties which have always been encountered. The Possum appears to have overcome the greater part of these difficulties, and it is in addition a very fine flying machine.

The firm has taken great practical interest in the light aeroplane movement, and has produced in the Pixies, a series of such machines of the greatest merit.

At the present time they have in hand the production of a very interesting advanced training machine of high performance, and in addition are constructing two experimental Auto-Giros of a type considerably more advanced than the purely experimental models produced as yet.

ROLLS-ROYCE LTD.

Founded in 1907 by the amalgamation of the interests of Royce Ltd. and C. S. Rolls and Co., to carry on the development of the motor-car manufacturing and merchanting work in which these firms have been associated for several years, Rolls-Royce Ltd. were content with the search for perfection in motor-cars alone until the outbreak of War in 1914.

But considering the work of the Hon. C. S. Rolls as a pioneer of British Aviation, and Mr. Royce's known interest in all really difficult engineering problems, it cannot be believed that the aero-engine was not studied by the firm long before they began to design them. And the fact that the Rolls-Royce Hawk was produced in 1915 and that it was followed in the following year by the Falcon and Eagle types is fairly convincing proof that the aero-engine had been very carefully studied long before the war.

When war broke out the Rolls-Royce 40/50 h.p. "Silver Ghost," stood in a class apart from all other cars. In design, and construction, in the quality of materials and workmanship, and in its all-round performance and unfailing reliability it represented in the car world rather a standard towards which other makers of cars might strive, than a competitor whose achievements might be emulated.

And when the methods of design and construction which had produced the Rolls-Royce Car were applied to the production of aero-engines, the results were what might have been expected. Aero-engines, up to the time when Rolls engines first appeared, achieved the low weight per h.p. which was the primary essential of their qualities, only at the price of running at the limit of their capacity, and as a necessary consequence had but a limited life, and that far from a reliable one.

Rolls engines were from the beginning designed to develop their rated output not only at a strictly limited weight, but with a large margin of reserve strength. How precisely the result was obtained is largely Mr. Royce's secret, but that it was achieved is shown by the fact that the Eagle type, designed in the first place for 200 h.p. was in service in its first model rated at 250 h.p.; by the end of 1916 the Eagle V of 320 h.p. was in production and at the end of the War the Eagle rating was 350 h.p.

And this rating was combined with a reputation for reliability unsurpassed by any engine then produced.

Of the work achieved during the War by the Hawk, Falcon, and Eagle types of Rolls-Royce engines, it is unnecessary to speak here. Nor is there much need to discuss their achievements since.

The Eagle, which has now reached the series IX, with a rating of 360 h.p., has been extensively used both in Britain and abroad, both for civil and military purposes under conditions which make the most exacting demands on an aero-engine, and it still maintains its position as probably the most reliable engine of its power yet produced.

So far the Eagle series has been followed by only one more class of Rolls-Royce engine—the Condor series, which was first produced in 1920 at a rating of 525 h.p., and is now represented by the Condor III of 650 h.p., and the Condor IV of 700 h.p. This series of engines has shown that the Rolls-Royce characteristics still retain their full vigour.

Other Rolls-Royce engines are to be expected in the future. At the moment even the names or type numbers may only be mentioned darkly and in quiet corners, but in course of time they will doubtless become as much household words in aeronautical circles as, say, Eagle is to-day.

S. E. SAUNDERS LTD.

Long before The Aeroplane existed Mr. "Sam" Saunders, as he is usually called, as a mark of affection, was famous as a builder of small seacraft, and was particularly noted for very light racing craft in which the Saunders sewn skin system was employed. This system, which has now developed into the well-known "Consuta" sewn plywood, played an important part in the development of British sea-going aircraft.

The Sopwith amphibian of 1912, which won the Mortimer Singer prize of £500 for making seven consecutive landings alternatively on land and sea, was fitted with a Saunders hull with Saunders' sewn skin.

Even before this, however, Mr. Saunders had shown a practical interest in aeronautics. Some very early experimental aircraft work was carried out by him for Sir Hiram Maxim, and in 1909 an experimental flying boat, known as the Revaud, was constructed.

The Sopwith amphibian—the first successful aircraft of its type—was followed by the very successful Sopwith "Bat-Boat," which also had a Saunders hull, and between 1912 and the outbreak of War in 1914 three other types of boat—the Wigram, the Perry-Beadle and the Bass-Paterson—were built at the Saunders works, in addition to a number of B.E. biplanes ordered by the Government in 1913.

At the beginning of the War the Saunders works became very busy with aircraft. Their first order was for Avro biplanes, but they were rapidly followed by an order for large flying-boat hulls, followed by another for Short seaplanes.

To meet war requirements the works had to be very greatly enlarged, a process which went on continuously up to the Armistice. This has left the firm with one of the largest and best-equipped seaplane works in the country. For the first few years after the Armistice the seaplane was gravely neglected by the authorities, but S. E. Saunders Ltd. continued their efforts with the type.

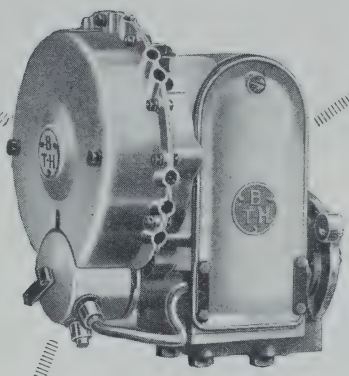
Entirely at their own expense they built the Kittiwake amphibian—a twin-engined machine designed for commercial purposes, and constructed throughout of Consuta. This machine showed great promise, but unfortunately was run onto some submerged rocks during trials by a pilot unacquainted with the neighbourhood, and has never been restored to her original condition.

The firm has not only a thoroughly competent design staff, but also model making and testing equipment, and it is now building large seaplanes for the Air Ministry, as well as a commercial flying boat for Imperial Airways.

A specially equipped factory for the production of Consuta is also at work producing this material for both home and foreign consumption, including supplies to the Norwegian and Japanese Air Forces.

SHORT BROS. LTD.

The firm of Short Bros. Ltd. began its existence as balloon manufacturers at Battersea in 1898. In 1907 Short Bros. were appointed "Official Aeronautical Engineers" to the Royal Aero Club. In 1908 they established aeroplane works at Leysdown, Isle of Sheppey, and in 1909 a Short biplane, piloted by Mr. J. T. C. Moore-Brabazon won a prize of £1,000 offered by *The Daily Mail* for the first closed circuit flight by an all-British aeroplane.



B T-H

Magnetos

First and second places in every Aerial Derby have been gained by machines fitted with B.T.H. magnetos, and, as further indicating the outstanding reliability and efficiency of these magnetos, it is interesting to record that they gave continuous and faultless service during the whole of Mr. Alan Cobham's remarkable flights from London to Cape Town and back, and Croydon to Zurich and back.

The British Thomson-Houston Co., Ltd.

ELECTRICAL ENGINEERS AND MANUFACTURERS

Alma Street :: :: :: Coventry

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

In 1911 the aeroplane works of the firm moved to Eastchurch, and here was produced a series of aeroplanes which included the first multiple-engine machines ever flown in any country. It was at Eastchurch and upon Short machines that the first four officers appointed by the Admiralty to learn to fly learned about Aviation in the year which saw the birth of this paper.

Eastchurch, although it was actually the property of the Aero Club, became also a naval air station, and was to a large extent the headquarters of the Naval Wing, R.F.C., and as a not unnatural result Short Bros. were induced to take a special interest in the problems of naval flying, and became about 1911 the pioneers of seaplane design in this country. It may almost be said that but for Short Bros. the R.N.A.S. would have possessed no seaplanes on the outbreak of war, and although in course of time other works were able to supply useful seaplanes for war purposes, Short Bros. were during the whole period of hostilities among the chief designers and producers of this class of aircraft.

The firm is not content to rest upon its war and pre-war reputation for initiative. During the past few years it has—in the face of the innate conservatism of the Air Ministry—consistently pressed the claims of light alloys as a constructive material for aircraft. It has backed its belief in this material to the extent of constructing quite a number of machines, of varied types, with duralumin frameworks, and these machines have been so successful that the powers that be have at last been convinced. And it is now recognised that metal hulls are essential features of the modern seaplane.

These same authorities are not yet so completely convinced as to the merits of the light alloys for the remainder of the structure of aircraft, but have at least so far modified their attitude as to order machines completely framed in duralumin.

At the present moment Short Bros. are at work on a very large all-duralumin flying boat, which is unfortunately still secret, and there is little room to doubt that this machine will go far to remove any remaining scepticism concerning the suitability of duralumin as a general structural material for aircraft.

THE SUPERMARINE AVIATION WORKS LTD.

The Supermarine Aviation Works Ltd. at Woolston, near Southampton, were founded in 1912, by that remarkable genius, Mr. Noel Pemberton Billing, who had been experimenting with aerofoils since 1908 or so. Their first productions were experimental high-speed hydroplanes. These were followed in the year 1914 by a flying-boat of remarkably advanced design. It embodied a hull with a circular section in the main structure, to which a planing bottom was added by building on appropriate fin surfaces. Thus in one of the very first attempts to build a flying-boat in this country the Supermarine Works had arrived at a type of hull identical in its general form with the most modern type of wooden hull yet developed.

During the opening stages of the War the Supermarine Works were mainly employed on repairs for the R.F.C., but also built certain experimental land machines. Later they were diverted to the construction of experimental seaplanes largely under Admiralty control. In 1916, after Mr. Pemberton Billing had ceased to be connected with the firm, and Mr. Hubert Scott-Paine had become the moving spirit, the Supermarine Works produced a highly-successful flying-boat which, like their first machine, embodied a circular-framed hull.

Towards the end of the War, Squadron Commander James Bird, R.N., now the directing genius of the firm, was allowed to retire from the R.N.A.S. in order to join the Supermarine Co., which accounts for his having a rank which no longer exists, though at the time it was a substantive rank in the Royal Navy.

With the exception of one light aeroplane built in 1924, the Supermarine Works have, ever since then, produced only seaplanes and amphibians, and their efforts in an otherwise much neglected branch of work have been very largely responsible for the advances which have been made in seaplane design and construction during recent years.

In 1919 a Supermarine passenger service was opened operating from Southampton along the British coast, using Supermarine Channel-type boats.

This was the first attempt, so far as is known, to operate a seaplane passenger service, and from this effort sprang the later service to the Channel Isles promoted by the British Marine Air Navigation Co., originally a closely associated firm, but now unfortunately merged in Imperial Airways Ltd.

The Channel-type boat used in this service found many other uses. It found favour as a training machine in many foreign naval air services, and has been exported to Norway, Japan, Chile, and Sweden in considerable numbers. It was adopted in 1920 by a Norwegian mail-carrying company with success.

The first amphibian flying-boat built in this country since the pre-war Sopwith was produced at Woolston in September, 1920. This machine was designed for commercial purposes, and won the prize of £8,000 in the amphibian class at the Air Ministry Competition for commercial aircraft.

In 1921 was produced the first deck-landing amphibian, a type now known as the Seagull, which has since been ordered in numbers by the Air Ministry.

On Aug. 12, 1922, the contest for the Schneider Trophy, held in Naples, was won by Capt. H. C. Biard on the Supermarine Sea Lion, a flying-boat with a Napier Lion engine.

In 1923 the Scylla and the Swan, both twin-engined boats, were laid down for the Air Ministry, and also the Sea Eagle, a passenger-carrying machine, for the Channel Islands service. In the following year the firm supplied to the Spanish Government twelve amphibian boats of a type known as the Scarab. These were successfully used in the Moroccan campaign, thus becoming the first amphibian flying boats used on active service.

Also in 1924 the Southampton flying-boat was laid down.

The Southampton—which is fitted with two Napier Lion engines—proved to be a very great success. The first of the type was delivered in March, 1925, and in the Autumn of the same year a flight of four of the type made the now well-known cruise of 10,000 miles about the coast of Britain.

For the Schneider Trophy Contest of that year the Supermarine S.4 was built. This was a new departure for the firm in that it was of the twin-float type. The S.4 was one of the cleanest and most perfectly streamlined aircraft ever built, and in its preliminary trials raised the World's Seaplane Speed Record to 226.75 m.p.h.

At the present period the Supermarine Works, which have recently been greatly extended, are producing a number of the Southampton class for the Air Ministry, as well as an ultra-high-speed racer developed from the unfortunate S.4.

Further they have recently received an order from the Danish Government for a large flying-boat fitted with three air-cooled Jaguar engines. This order was obtained in the face of strong competition from a number of foreign firms.

VICKERS LTD.

In 1911 the Aircraft Department of Vickers Ltd. was already the subject of much discussion in the aeronautical world. That a firm of their importance, standing and financial resource considered the building of aircraft worthy of their attention was in those days considered to be a matter for surprise and gratification.

The feelings of the majority of contemporary British aircraft designers concerning this phenomenon were a little mixed. On the one hand it was recognised that if Vickers believed in the future of aircraft it was only reasonable to suppose that other financial interests might shortly come to the same conclusion, and finance was what the aeroplane constructor of those days needed most acutely.

On the other hand was the fear that with a firm of such influence and importance in the field, the independent designer stood small chances of competing successfully for any Government orders that might conceivably materialise in the near future. And then—as now—Government orders were the hope—though then only a hope—of the Aircraft Industry.

Neither the hopes nor the fears roused by Vickers' entry into the aircraft industry proved to be warranted. This event was not a prelude to a rapid flow of capital into a struggling industry, nor did Vickers proceed to sweep other aircraft constructors from the field by the use of their overwhelming resources.

On the contrary the Vickers Aircraft Department, which was organised in a highly businesslike way by the late Capt. Herbert Wood, of the 12th Lancers, settled down in harmony with their rivals at the work of developing the aeroplane, and the success which has attended their efforts in the past fifteen years has been a success earned by perseverance in this work and a continued display of the foresight which led to the original establishment of the undertaking.

At the time when the first issue of The Aeroplane appeared Vickers' aircraft section comprised a flying school and experimental flying establishment at Brooklands, and a constructional department at Crayford. Their first aeroplane was then flying regularly. It was a monoplane very largely of steel construction, based on the work of M. R. Esnault Pelterie but considerably modified in detail by Mr. (now Major) A. R. Low. This was really a remarkably fine machine, handicapped—as were most monoplanes of those days—by an engine of inadequate power. During the next few years their constructional work was almost entirely experimental and at a cursory view attended by relatively little results in the form of flying.

But in fact the result of this work was that at the outbreak of War the Vickers "gun 'bus," the first aeroplane which carried a machine-gun that could be used effectively, was in a condition to be put into production for service. This machine was of immense value to the R.F.C. in the early part of the War.

During the War Vickers aircraft activities were on an enormous scale, and to-day, naturally, they have notably contracted. Nevertheless their present aircraft factory, which lies on the eastern side of the Brooklands race-track is on a

BEARDMORE AERO ENGINES & AIRCRAFT



WB XXVI *Two Seater "Fighter"*

Fully controllable in stalled Flight.

SINKS ON AN EVEN KEEL WHILE FLYING AT AN ANGLE OF 60° to the horizontal, all controls being quite operative. Further, the machine can be rocked laterally, or pitched at will. Ratio of top speed to landing speed exceeds 3 to 1.

Designers and Builders of Large Types of All-Metal Aircraft and Aero-engines.

WILLIAM BEARDMORE AND COMPANY LIMITED

Aviation Works, Dalmuir, near Glasgow.

London Office: 36, Victoria Street, S.W.1.



THE NEW VIRGINIA.—The latest Vickers Night-Bomber (Napier Lion engines).

scale which would have appeared almost incredible fifteen years ago.

The Works Manager at those works to-day is Mr. P. Maxwell Muller who in 1911 was a prominent figure in the aircraft colony at Brooklands. And with him is Mr. Knight, one of the earliest of Brooklands pilots.

The range of their present productions is in striking contrast to anything that could have been expected in those early days.

Starting with the smallest of their machines, the two light aeroplanes, Viget and Vagabond—one a single-seater of 1923 and the second a two-seater of 1924—will be remembered in connection with the Lympne meetings of those two years. Both machines are small folding-wing biplanes which combine the minimum of dimensions with a remarkable performance. These machines are intended either for sport or for training purposes.

In the heavier types, the Vickers Viking series of flying boat amphibians, first produced in 1919, have passed through a process of steady development, culminating—so far as may at present be mentioned—in the Vickers Vulture, a type of machine which failed to circumnavigate the World through no fault of design or construction.

The Vickers Vimy—originating in the war—has passed through a still longer series of development, which again is still in progress. The original type of Vimy made the first flight across the Atlantic, and has many other great flights to its credit, and its successors—the commercial Vimy, and now the Vanguard—bid fair to uphold the Vimy tradition on the commercial side. The Virginia bomber, and the Victoria troop-carrier, of the same stock, are not behind on the military side. Development of this general class is still in progress.

Of more recent origin is the series of military two-seaters which are known as Vixens, Ventures and Valparaisos. These machines all resemble one another closely in general design, though they differ in details and equipment.

The Valparaiso is a two-seater reconnaissance type, of which a number have been supplied to foreign governments. It is fitted with either the Napier Lion or with the Rolls-Royce Eagle IX. The Eagle-engined machine has a maximum speed at 10,000 ft. of 118 m.p.h., and a landing speed of 50 with full fuel, crew, and 570 lbs. of Service equipment.

The Vixen is a two-seater bomber with the Lion engine—it carries 875 lbs. of military load and has a top speed at 10,000 ft. at 126 m.p.h.

The Venture is now being built for the Air Ministry in some number, and all that may be said is that it differs from the Valparaiso series only in details.

A float undercarriage has been designed for this series, and the members may be used either as seaplanes or land machines.

The Vendace—two-seater convertible land- or seaplane—designed as an advanced training machine for the R.A.F., has recently been described in this paper and is the most recent Vickers product which may publicly be discussed.

And their latest product, the Vespa, a two-seater fighter, with the more-and-more popular Jupiter engine, will be seen at the R.A.F. Display.

THE WESTLAND AIRCRAFT WORKS.

The Westland Aircraft Works are a branch of the firm of Petters Ltd. of Yeovil. This branch was established early in the War to meet the needs of the Naval and Military services for aircraft, and is under the general management of Mr. R. A. Bruce who had long before been connected with the British and Colonial (now Bristol) Aeroplane Co.

[Mr. Bruce's interest in flying goes further back than that, for one remembers meeting him at Eastchurch on Good Friday, 1910, watching the Hon. C. S. Rolls and Mr. J. T. C. Moore-Brabazon flying. At that time Mr. Bruce was working on the Brennan torpedo.—C. G. G.]

Very early in its history the firm undertook design work, among its earliest products in this line being a very successful single-seater fighting seaplane. They later designed and built the Westland Wagtail and Weasel—the first a single-seat, and the second a two-seat, fighter, which would have been produced in large numbers had the War continued—and probably even as it was, had it not been for the very serious trouble encountered with the A.B.C. air-cooled radial engines for which they were designed.

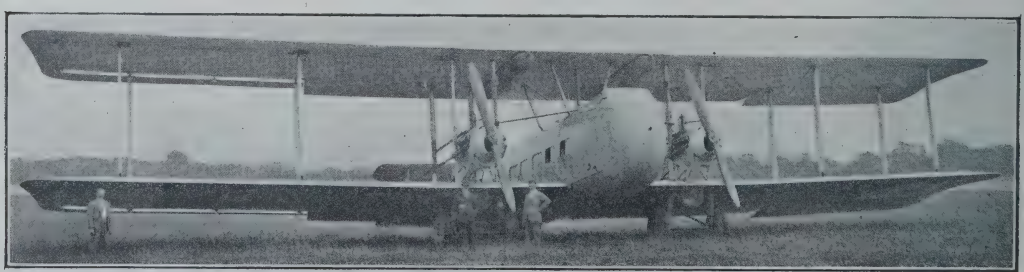
In addition they built types not of their own design in large numbers, and were responsible for the production drawings of the famous D.H.9a.

Since the War the firm has been amongst the most enterprising of British aircraft constructors. They were among the very first producers of a properly-enclosed passenger-carrying machine—the first Westland limousine appearing in 1919. In 1920 they followed up this with a larger machine of somewhat similar type, with a Napier engine, which won the first prize in the small class in the Air Ministry competition for commercial machines. This machine afterwards did splendid service in Newfoundland, and another of similar type was used by the Air Ministry for experimental night-flying services.

For the 1923 two-seater light aeroplane competitions the firm built two extremely interesting types of machines.

When the rules for that competition were published, the firm concluded that only two courses were open to them. One was to design to do well in the competition. With only 30 h.p. available a two-seater for this purpose did not seem likely to be a useful or robust aircraft. The other course was to build useful machines and to see how they fared in the contest.

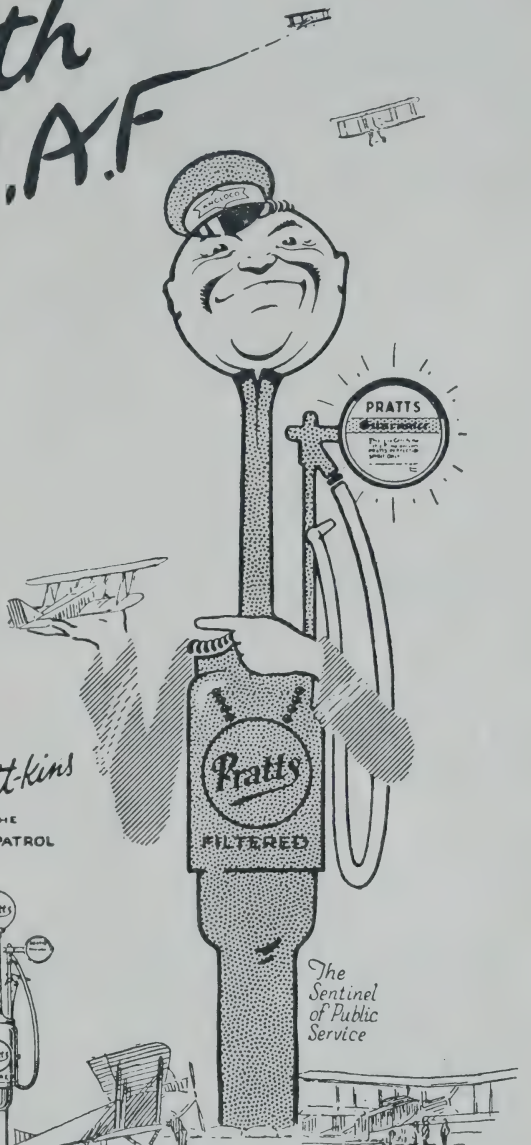
The two machines—the Widgeon monoplane and the Woodpigeon biplane—were produced mainly to permit of a comparison between the monoplane and biplane types. No at-

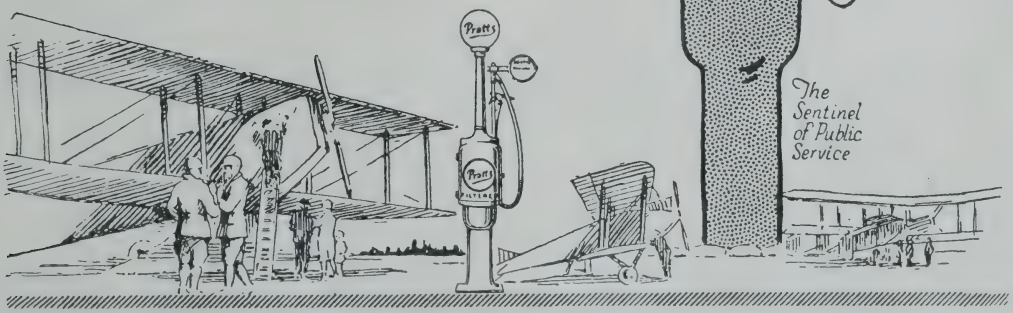


THE NEW VICTORIA.—The latest Vickers Victoria (Napier Lion engines), a revised version of the well-known troop-carrier.

A day with the R.A.F

Don't miss seeing the sixth Royal Air Force Display at Hendon Aerodrome on SATURDAY, July 3rd. My friends the Airmen will give you thrills enough to last for months. They're daring men, these fighters of the air, but careful too when it comes to engines and fuel.





Pratts

The Perfectly Natural and Naturally Perfect Petrol

D.A. 548.

tempt was made to sacrifice the comfort and the vision of the crew to low resistance, nor to cut weight at the expense of robustness, and the firm in consequence did not expect to win prizes with the machine.

These machines have proved of considerable value for economical experimenting. They have allowed full-scale tests of new undercarriage designs, of an interesting camber-changing gear, and have permitted a direct comparison of the performance of each machine with wind-tunnel tests of the models thereof.

An engine of adequate power is being fitted to the Woodpigeon, and this machine is likely in the near future to attract considerable public notice.

Another example of their characteristic enterprise is to be found in their acquisition of the services of Capt. G. T. R. Hill and their intention to develop his tail-less type of aeroplane.

In addition the Westland Works have carried out much experimental design and construction for military purposes, and have recently produced the Yeovil day-bomber—a machine fitted with the Rolls-Royce Condor engine of 650 h.p. This machine has been an outstanding success, and is now being built for the equipment of R.A.F. squadrons.

They are at present completing a high-performance single-seater of the fighter type, built entirely as a private venture and not to official specification. This, it is interesting to note, is a monoplane, and trials of the first machine, which should begin very shortly, should be of great interest.

ACCESSORIES TO THE FACT.

ACCLES AND POLLOCK LTD.

It is usually supposed that the all-metal aeroplane is a very recent development—and in the sense that really practical all-metal machines have only been produced fairly recently, this is true. Nevertheless fifteen years ago there were already those who foresaw that the all-metal aeroplane must come, and also those who were ready to attempt to build it. One of the earliest attempts to build an all-steel aeroplane was that due to Lt. John Seddon, R.N. (since Wing Commander, R.A.F.).

This machine was an extremely ingenious and somewhat complex structure mainly of steel tube, in the construction of which a large amount of skilful and accurate workmanship was involved. And this workmanship was provided by Accles and Pollock Ltd. in 1910. The present writer had occasion to inspect certain parts of this machine in 1915 with a view to utilising them, and it certainly cannot be said that any improvement in the general standard of detail design embodied in this very early work had been generally attained by aircraft constructors in the intervening five years.

For all classes of steel tubular work and pressed steel components for aircraft, Accles and Pollock were in those days supreme. They are still so.

AERONAUTICAL PANEL AND PLYWOOD CO. LTD.

This firm—makers of the famous Mallite Plywood specially constructed for aircraft construction—is a relatively recent member of the Aircraft Industry, but as an off-shoot of the firm of Wm. Mallinson and Sons Ltd., the well-known timber merchants, it has antecedents which go far back in the History of Aviation.

In 1911 aeroplane constructors were, generally speaking, very short of ready money, and their requirements in the matter of timber were small in quantity, but rigorous as to quality. The average small timber merchant either had no timber of the required quality, or could not be bothered to rake out small quantities of it for an ocasional customer.

Wm. Mallinson and Sons Ltd., however, went to the trouble and expense of making a special effort to supply suitable timber, and to advise even the smallest and most occasional of their clients in the Aircraft Trade concerning the choice of suitable woods for particular purposes. This effort on their part can certainly have brought in no adequate financial return up to the outbreak of war, but they did establish a reputation in the aircraft world which brought in a colossal business during the war.

To-day the aircraft manufacturer usually operates on a scale that justifies him in employing a competent timber buyer and in buying his own stocks of timber direct from the shippers. But he is not yet able to produce his own plywood, and for this essential he to-day relies on the Aeronautical Panel and Plywood Co. Ltd., just as his forbear of fifteen years ago rested upon Mallinson for timber generally.

THE ANGLO-AMERICAN OIL CO. LTD.

Whatever it is that makes the World go round, there is very little doubt that oil does its share keeping its bearings cool, and the Anglo-American Oil Co.—who purvey Pratts Spirit—also do their share in keeping the World's aero-engines turning. Who first used Pratts for an aero-engine, and when he did it, one cannot tell—but it was probably some very considerable time before THE AEROPLANE saw the light.

When that auspicious event occurred there was no such thing as aviation spirit, and aero-engines ran on the same brand of Pratts as was supplied to the motor-car engine. It is true that in these days petrol, on the average, was a lighter and cleaner spirit than a good deal of the fluid that now passes under that name, and that aero-engines were generally of fairly low compression and not quite so pernickety as they are to-day. Still, even then they were particular, and Pratts spirit was tried and not found wanting.

To-day Pratts is good enough for to be used exclusively by many of the leading Air Lines of Europe—which is another way of saying good enough for anything.

BOWDEN CONTROLS.

The extraordinarily ingenious Bowden Cable which persuades a very flexible wire rope to transmit both tension and compression along any convenient path—whether straight or sinuous—had been employed for cycle and motor-car controls for a good many years before either the printed or the flying aeroplane came into being. And very naturally it was extensively used on aeroplanes for such matters as engine and magneto controls as soon as these came into being, for its proved reliability, its lightness and adaptibility were precisely the qualities that were required by the aeroplane designer.

To-day an Air Ministry in its omniscience forbids the use of Bowden engine controls and insists on a heavier, more complicated and expensive system of doubtfully superior reliability, but there are nevertheless many uses to which Bowden Cable may be put in the modern aeroplane, and for these its original qualities still suffice to ensure its use.

THE BRITISH AVIATION INSURANCE GROUP.

It was possible even in 1911 to insure aircraft against all flying risks if one was prepared to pay the required premium, and it is understood that a certain small number of aircraft policies were issued at about that time by the White Cross Motor Insurance Association, predecessors of the present White Cross Aviation Insurance Association. In addition, the leading flying schools were even then covering both themselves and their pupils against third party risks by insurance.

But it was not until after the war that Aircraft Insurance became a definite and distinct business. The British Aviation Insurance Group consists of an alliance formed by the Union of Canton Insurance Co. Ltd., and the White Cross Aviation Insurance Association in the year 1919 in an effort to place aircraft insurance upon a sound and businesslike footing, and to secure for aircraft the same sort of world-wide uniformity in insurance conditions as are to be found in Marine Insurance as a result of the Lloyd organisation.

The Aviation Insurance Group are themselves members of Lloyd's and all their policies are underwritten at Lloyd's, so that the security afforded by one of their policies is on an unimpeachable basis.

The aviation business of the group is kept entirely separate from any other business in which the concerns implicated are interested and is controlled by a specialist staff thoroughly acquainted with the technical and commercial aspects of aviation. They are thus able to discriminate between the wide variety of risks which it is sought to insure with them.

They have in fact done very much by judicious exercise of their knowledge to raise the standard of safety of flying both in this country and abroad.

In the course of time it is to be hoped that a strong aviation insurance group will be the main controlling agency in securing a high standard of safety in flying and that Governments will retire from all but the most elementary control of aviation. The British group is working in preparation for that end. They are already in a very strong position indeed, and they have established so overwhelming a reputation throughout the World that it can be safely assumed that the future Lloyd's of Aviation will be as British an institution as the original Lloyd's.

BRITISH CELANESE LTD.

Cellulose—the material which forms the cell walls of all plants—in its raw state is to be found growing wherever there is vegetation. In more or less the condition in which Nature produces it it is a material very widely used. Cotton and all other vegetable fibres are practically pure cellulose, and pure cellulose forms a large ingredient in many papers.

Gun-cotton—formed by treating pure cellulose in the form of cotton fibre with nitric and sulphuric acids—is cellulose nitrate, and cellulose nitrate is not only the basis of most of the propellant explosives used in modern firearms, but is the main component of celluloid, of some kinds of artificial silk, and the most widely used type of aeroplane dope.

Cellulose acetate, another derivative of vegetable cellulose, has many of the properties of the nitrate, but is not only not explosive but will not keep itself burning in the absence of some auxiliary fuel, and is now largely used, except for ex-

CELLULOSE ACETATE

"NOVELLON"
DOPES AND VARNISHES

SUPREME
For tautening, weather-proofing ; also petrol and castor-oil proof.

- - - FIRE RESISTING - - -
- DO NOT DETERIORATE IN STORE -

EXCLUSIVELY USED ON ALL BRITISH AND ALLIED WAR PLANES.

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Works: Spondon, near Derby.

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plosive purposes, as a safer substitute for the nitrate for most industrial purposes—including aircraft dopes.

Before the War Britain imported large quantities of cellulose, and its derivatives, from Germany. When war came the demand, both for explosive purposes and for use as aeroplane dope, increased enormously, and Government action was necessary to stimulate production in this country of the necessary material.

This action took the form of The British Cellulose and Chemical Manufacturing Co. Ltd. with strong Government financial support. This firm organised the production of both cellulose nitrate and acetate on an enormous scale, and provided materials essential to the production of the British and Allied aircraft supplies.

Since the Armistice the firm has been reconstructed as British Celanese Ltd., the Government interest has disappeared, and the firm has been forced to devote its energies largely to the production of Celanese—a fibre of the so-called artificial silk variety. Nevertheless they still produce aeroplane dope, and their capacity for producing cellulose derivatives is sufficient to secure the Aircraft Industry adequate supplies of dope in any future emergency.

THE BRITISH THOMSON-HOUSTON CO. LTD.

To the British Thomson-Houston Co. the founding of The Aeroplane is a relatively recent affair, for the firm was founded certainly in the 188o's to exploit in this country the electrical generating and lighting system then associated with the names incorporated in its title. In the course of time the firm developed into one of the great leaders of the Electrical Engineering Industry—a position which it still holds—and a manufacturer of every type and class of electrical apparatus and of accessories used in connection with electrical work.

In 1911 the name of Bosch possessed an almost magical significance in connection with magnetos, and although there were actually British magnetos of the highest quality in existence, they were not able to compete with the fashion for Bosch ignition gear either on cars or for aeroplane engines.

With the outbreak of War it became essential to organise the manufacture of magnetos in this country, on a really large scale, and the British Thomson-Houston Co. Ltd. were one of the largest contributors to this effort. They designed and produced a magneto on a system definitely different from that employed in the hitherto predominant Bosch, which has proved to be in every respect as good as that make was supposed to be.

And to-day, though it is possible once more to obtain German magnetos, British Thomson-Houston supply the ignition gear fitted as a standard by all the British aero-engine makers.

BROWN BROS. LTD.

Brown Bros. Ltd. were famous as among the largest wholesale factors of cycle components, fittings and accessories long before aeroplanes began to fly—or motor-cars were allowed to dispense with a bearer of the red flag. And when motoring did become a practical proposition, Brown Bros. very shortly began to cater for the needs of the motor trade.

When The Aeroplane came into being Brown Bros. had already been found by the then aircraft constructors to be one of the promptest and most satisfactory sources of supply for all such components—and these were many—as were common to the needs of the car and the aeroplane. They had already, one believes, began to stock such specifically aircraft components as turnbuckles and eyebolts.

When War so vastly increased the demand for aircraft components, and the authorities instituted the famous A.G.S. standard components and the official A.I.D. inspection system, Brown Bros. were ready to supply this new demand.

To-day the demand for A.G.S. parts is much reduced, but it is still very large compared with that for the cruder components available in the days before August, 1914, and Brown Bros.' aircraft department is still the best place to go to if you need aircraft components to standard specifications passed by A.I.D.

CELLON (RICHMOND) LTD.

In 1911 the fabric covering of aeroplane wings was treated with a variety of preparations in the endeavour, usually ineffectual, to keep it taut. One of the most used of these early "dope" was ordinary flour paste, and the majority of the alternatives were not appreciably superior to paste in any of their qualities.

Cellon, the first of the modern Cellulose dopes, was introduced in the summer of that year by Mr. A. J. A. Wallace Barr. The first reference to it that one can trace appeared in The Aeroplane of Sept. 14, 1911, when the impending formation of a company, which was known as Cellon Ltd., to manufacture it in Britain, was announced. It is interesting to note that the claims made for Cellon at that early date by "Ajawb" could still be upheld to-day by Mr. Wallace Barr.

Cellon was rapidly recognised as a solution of the "dope" difficulty. By the following year it was in extensive use. The winner of the 1912 Military Trials, Mr. Cody, used it, and it was used by every successful competitor in the competitions of that year.

When war came the demand for Cellon naturally increased very rapidly. In 1916, the firm of Thomas Tyrer and Co., who had carried on the manufacture of Cellon for Cellon Ltd., laid down large new works at Richmond, and in 1918 Cellon (Richmond) Ltd. was formed which took over the Richmond works from Thomas Tyrer and Co., and undertook manufacture on its own behalf.

After the War the demand for Cellon dope naturally declined, but the material had established such a reputation that orders from abroad arrived in increasing volume, and it became necessary to establish branch works in Paris, Brussels and Barcelona.

The firm also began research into the development of cellulose solutions for other purposes, and successfully developed the now well-known "Cerric" lacquers, which are used for motor-car body-work, and to replace stove enamel and French polishing in the furniture and piano industries, and for many other purposes where durability and the highest possible finish of surface are required.

During the same period steady progress has been made with the original use for which Cellon was intended, and to-day Cellon doping schemes to meet any requirements are claimed to be the most economical and efficient.

The present works at Richmond, although adequate for the needs of the late War, are not adequate to meet the present-day demand for the various Cellon products, and arrangements are now being made to erect new works.

THE HOYT METAL COMPANY.

The very possibility of flying rests upon the existence of the internal combustion engine—which so far alone is capable of providing sufficient power within the permissible limits of weight. And even the internal combustion engine can only be satisfactorily adapted to aeronautical purposes by pressing it to limits of output for a given weight which are not attempted for any other service.

This means that the aero-engine is among the most severely stressed of modern mechanisms, and in particular bearing loadings and speeds commonly attained in aero-engines are extremely high when compared to those employed in normal engineering practice. Only the best design and the best materials can safely be used in the bearings of such an engine, for bearing failure will mean not merely engine failure, but in all probability a written-off aeroplane as well.

Certainly Hoyt bearing metal had already proved its suitability for aero-engine conditions when this paper was founded. The 35 h.p. Green engine was fitted throughout with Hoyt metal bearings and in 1911 had a well-established reputation. The same make of bearing metal was used in the 60 h.p. and the 100 h.p. Green engines of nearly as early a date. In 1914 the 100 h.p. Green won the first prize of £5,000 in the Military Aeroplane Engine Competitions with Hoyt Metal bearings.

On Oct. 24, 1912, at Brooklands, Mr. Raynham, on a Green-engined Avro, raised the British Duration Record to 7 hours 30 minutes—a record which lasted something under one hour as it was beaten within that period by Mr. Hawker on an A.B.C.-engined Sopwith which flew 8 hours 23 minutes. Both the engines were fitted with Hoyt Metal bearings.

Since then Hoyt bearing metals, particularly their well-known as No. 11 Alloy, have been used almost universally for aero-engine bearings.

During the War, 1914-18, one firm of engine makers and their licensees produced 50,000 engines so metalled, and during 1918 1,750 tons of No. 11 were supplied for something like 250,000 aircraft engines.

Aero-engines are not produced in such quantities to-day, but Hoyt No. 11 is still in large demand for such as are made. As was recently recorded in these pages, the Bristol Jupiter, which recently flew 25,000 miles, sealed under official supervision, and Mr. Cobham's Jaguar used on the Cape flight, were fitted with Hoyt metal bearings.

The Hoyt firm are not content merely to sell bearing metal. They have organised a Technical Advisory service on the subject of bearings, and any problems connected with the choice of a suitable alloy and the design of bearings for special conditions may safely be submitted to them for advice.

IMPERIAL AIRWAYS LTD.

Fifteen years ago there was more civil than military flying going on in this country, but although there were those who foresaw the future development of aerial transportation, there was nothing that could ever be called an attempt at Commercial Aviation. It may be considered to be open to argument whether any aerial activities of to-day can properly be called commercial, but at least it can be said that very determined efforts are being made to establish air transport on a business footing. And Imperial Airways Ltd. is undoubtedly the most important of these efforts.

The general history of the British Air Lines is fairly well known. The initiative was taken by Mr. Holt Thomas, who

Pioneer Aviators proved

HOYT NUMBER ELEVEN

ANTI-FRICTION  (WHITE) METAL

UNEQUALLED for ALL TYPES AVIATION BEARINGS.

OVER 92% STRAITS OR ENGLISH REFINED TIN

ABSOLUTE HIGHEST QUALITY ∴ MAXIMUM
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DEPENDABLE ∴ SURPASSES ALL OTHERS.



Bar twisted and hammered cold to show toughness.

"BRISTOL" JUPITER VI ENDURANCE TEST.

Engine Sealed by A.I.D. The ONE connecting-rod (big end) bearing was fitted with NUMBER ELEVEN in the ordinary course of production. Upon strip examination this was in excellent condition.

MR. ALAN COBHAM'S LONDON—CAPETOWN AND RETURN FLIGHT.

HOYT NUMBER ELEVEN METAL proved "entirely satisfactory" in the big end bearings (two) of the 385 h.p. "Jaquar" engine employed by Mr. Alan Cobham.

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Anti-Friction Metals and Die-Castings for every Bearing requirement.

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The four Fairey Machines, under the Command of Wing Commander C. W. H. Pulford, which have successfully completed the feat of flying in formation from Cairo to Capetown and back, and thence to England—a distance of about 14,000 miles—were equipped throughout with Tecalemit.

Tecalemit is fitted to over 8,000,000 Motor Cars, etc., throughout the World.

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formed Air Transport and Travel Ltd. in 1919, and started to operate a regular service between London and Paris.

This example was shortly followed by the formation of Handley Page Transport Ltd., and the Instone Air Line, and for a period these three lines operated in competition one with another, and also with certain French services. These latter services were heavily subsidised and it speedily became obvious that the British services could not continue unaided to face this competition.

At the end of 1920 Air Transport and Travel Ltd. ceased to function, owing to this state of affairs, and early in 1921 both Handley Page and Instone Services were suspended.

The Government had already announced its intention to offer a subsidy, and in March Handley Page and Instone Services were resumed. In 1922 the Daimler Hire Service inaugurated a third Air Line, based on the old A.T. and T. Ltd., and from then until April, 1924, under various modifications and rearrangements of the subsidy, these three firms struggled with adversity.

Imperial Airways Ltd. came into being as the result of the adoption by the Government of the recommendations of the Hambling Committee, which were briefly that the Government subsidy should take the form of a total sum of £1,000,000, to be distributed over a period of ten years, and that it should be confined to one concern operating on a large scale, and that all the existing lines should be amalgamated to form this one firm.

Imperial Airways Ltd. is thus a fusion of the three lines above mentioned, together with the British Marine Air Navigation Co. Ltd., which operated an experimental seaplane service with Supermarine boats from Southampton to the Channel Islands. The firm regularly operated services from London to Paris, Brussels, Cologne, Amsterdam, Rotterdam, and Berlin, as well as the Channel Islands service.

Their first year of operations was necessarily handicapped by the difficulties attendant on welding into one harmonious whole the staff and equipment of the earlier lines, and in a general reorganisation. Nevertheless, they succeeded in maintaining a very high standard of regularity and safety in their work. The results of the second year of working have not yet been published, but that year has shown a marked improvement in the volume of traffic carried, and in the maintenance of an even higher standard of regularity and safety.

Their lines have been equipped with new aircraft throughout—the single-engined type has been retired from regular service in favour of multi-engined types, in the interests of safety and reliability.

The reputation of Imperial Airways' pilots is world-wide and barely needs mention here. The perfection of their organisation for the maintenance and overhaul of machines and engines is another factor in their success. These two factors between them account in the main for the rarity of accidents in the past and may be relied upon in the future. Sir Eric Geddes, the Chairman of Directors, Major G. E. Woods-Humphery, the General Manager, Major H. G. Brackley, Air Superintendent, Mr. H. L. Hall, Engineer Superintendent, all deserve the highest credit for the good work they have done for Air Transport during the past year.

With this combination of sound organisation, enterprise, and extensive official support, the future of Imperial Airways should be assured.

K. L. G.

Though aeroplanes may fly without K.L.G. sparking-plugs, there are mighty few British aeroplanes which do so. In air affairs, when one talks of sparking plugs, one thinks automatically of K.L.G.s. These plugs were the result of personal research by Mr. Kenelm Lee-Guinness, as a racing motorist when aeroplanes were very young. He discovered the type of plug which best stands up to high compressions and high revolutions. And so the aero-engine of to-day gets what it needs in the way of spark-providers.

KODAK LTD.

To-day those who take photographs may be divided into two sections. One—by far the larger—owns a Kodak. The other smaller sections consists largely of those who use some plausible imitation of the Kodak, together with a few superior beings who look down on their brethren as mere button-pushers.

Whatever may be one's personal attitude towards the photographer who is content to push the button and hope that those who do the rest will be able to make something of the result, it is obvious that the Kodak firm, which has made this type of photography almost universal, can themselves have little to learn about photography both as an art and as a science.

The success of the Kodak Co. Ltd. has been a success based only on sound business principles, and among these principles is to be numbered a recognition of the value of exact knowledge. The research department of the Kodak firm has long been famous.

And when in the course of the War the problems of aerial photography became of pressing importance the accumulated knowledge and experience of the Kodak Co. was available to help in solving these problems. Eastman Aero-Cameras were produced to meet military needs with great success—to-day they are available for equally successful use in the peaceful pursuit of photographic aerial survey, or for the less exacting but often equally profitable business of providing aerial views for educational and advertising purposes.

If you have photographic problems you may be certain the Kodak Co. can help you to solve them.

MARCONI WIRELESS TELEGRAPH CO.

Aircraft wireless was very largely a development which was forced by the needs of war, but it is not usually remembered that the problem of communicating with an aeroplane by wireless had received attention long before 1914. In the first volume of THE AEROPLANE references may be found to the efforts of a certain gentleman, later famous for certain "Death Ray" exploits, to communicate by wireless telephone with Mr. B. C. Hucks's Blackburn monoplane.

In the same volume was reproduced a photograph of a member of the Marconi staff making measurements of the capacity of the Flanders monoplane with a view to the possibility of fitting wireless. From 1912 to the outbreak of war the Marconi firm carried out a series of experiments to the same end at Hendon, and when war broke out practical wireless transmitting and receiving sets for aircraft were available and were immediately put into service, certainly on naval aeroplanes.

These, however, were telegraphic sets, and it was not until the Summer of 1915 that a spoken message was successfully transmitted from an aeroplane to the ground using a continuous wave valve transmitter. This success was achieved by Major Prince in collaboration with Capt. H. J. Round, of the Marconi Co., at the Brooklands wireless school.

Satisfactory intercommunication between machines in the air was attained in 1917.

It might appear that progress was made very slowly. It must not be forgotten that the valve generator of continuous waves—the only type that can be used on aircraft—was not more than a little-known scientific novelty in 1914, and that aircraft W.T. called for the adaptation of the valve to conditions singularly unpropitious. It was only possible to use low powers, the apparatus had to be simple and suitable for use by a pilot ignorant of wireless theory and fully occupied with other matters. When sending from an aeroplane the transmitter had to record speech above the engine roar, and, working the other way round, the receiver had also to overcome a colossal volume of external sound.

Over and above this the ignition system of the engine was in effect a little wireless transmitter of incoherent noises.

Altogether it is somewhat surprising that progress was as rapid as it was during the period of hostilities. Since the War the Marconi Company have devoted much time and attention to still further improvement in aircraft wireless communication, particularly in connection with its application to air-line services.

A special department for research and experiment was formed, and an aeroplane—the familiar Marconi Avro—has been kept in commission for the past five years for this purpose.

Wireless on civil aircraft is essential for safe and regular operation, and has two main functions—that of permitting communication between the pilot and the ground organisation, and for the navigation by wireless position finding. The first, communication, allows of the pilot being kept informed during flight as to the weather conditions ahead of him, of the best method of avoiding local disturbances, etc., and in addition of any special instructions that may be necessary or desirable after he has once left his starting point. For many obvious reasons communications of this type are best made by the spoken word.

D.F., or Direction Finding, is at present the only practical method of accurately navigating an aeroplane when the ground is invisible because of fog or darkness, and on sea routes. It calls for special apparatus not required for communication pure and simple, but obviously in the aeroplane, where both weight and space are of importance, it is desirable to make as much of the wireless gear as is possible common to both services.

The Marconi Co. have developed aircraft wireless gear for both these purposes, which combine the qualities of efficiency, reliable and simple operation, compactness and light weight in an astonishingly complete manner.

THE PALMER TYRE LTD.

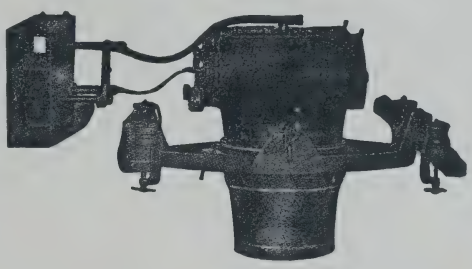
Fifteen years ago aeroplane landing wheels were shod with an odd diversity of tyres. There was certainly a foreign manufacturer of specially light covers—somewhat resembling an "open-sided" racing push-bike tyre, except in size, which was largely used on French aircraft, and was constantly bursting, puncturing, or blowing off its rims. The majority of British machines used motor-cycle covers and rims which were in many ways more satisfactory but obviously unnecessarily heavy.

Eastman Aero Camera

Model K1

for Topographical Work

The Eastman Aero Camera (Model K1) is entirely automatic in action. Driving power is provided by a wind motor containing a rotary paddle wheel, with a lever control, which also regulates intervals between exposures. Any number of exposures—size $9\frac{1}{2}$ ins. x $7\frac{1}{16}$ ins. (18 x 24 cm.) —up to 100 can be made on one 75 ft. roll of Eastman Daylight Loading Film. The film is held flat by the constant suction caused by the Venturi tube. Shutter speeds can be varied at will from 1/90 to 1/310th of a second. Fitted with either 12 in. or 20 in. f4.5 lens.



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AEROPLANE ACCESSORIES.



First in the Field, and still Miles ahead.

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All standard A.G.S. parts kept in stock.

15 YEARS' EXPERIENCE.

APPROVED INSPECTION.

Let us quote you!

RUBERY, OWEN & Co.

DARLASTON, SOUTH STAFFS.

PHONE: DARLASTON 130.

H.E. Wiley.

And even the best of these would tear off the rim, probably leading to the collapse of the latter in any landing with side-drift.

It was in 1913—if memory serves correctly—that the Palmer aero tyre with its specially designed wheel was first produced by the pioneers of the cord tyre for motor-cars. This tyre and wheel was specially designed to meet just these conditions which had proved fatal to all previous tyres used for this purpose, and experience speedily proved that it had been well designed.

By the outbreak of war it was the only tyre used on British aeroplanes, and during the War it was used by all the Allied air forces. To-day it is still the standard equipment for British aircraft.

RUBERY OWEN AND CO.

Even in 1911 steel was an essential material for the building of aircraft. Broadly speaking its use was confined to small, but nevertheless vital, fittings and bolts and other fastenings. Steel tubes were fairly commonly used for such main structural members as fuselage longerons, struts, and engine mountings, for rotary engines were invariably fixed on steel back-plates. Relatively to the size of the Aircraft Industry there was already quite a demand for aircraft fittings such as turnbuckles, eyebolts, and the like.

In the earliest days of The Aeroplane Rubery Owen's was one of the first names that suggested itself in connection with such supplies. In the fifteen years which have elapsed since, steel has become even more important in the construction of aircraft.

Not only is there a really large demand for the standardised aircraft components known as A.G.S. parts, but steel members of the most varied design are used for all and every part of the framing. And to-day it is still true that if one considers likely sources of supply for steel aircraft components, the name of Rubery Owen and Co. is one of the first to come to the mind.

SHELL MEX LTD.

Since machinery has been among the commonplaces of life inquisitive youth has always been prone to inquire as to "What makes the wheels go round." The correct answer to this inquiry is not always easy to supply, but the parent whose offspring wishes to know what makes the propeller of an aeroplane go round can fairly safely answer, "Shell, my boy."

And this answer would have been as safe when The Aeroplane was founded in 1911 as it is now. In those days John Cates of the Shell Co. was as much a standing feature of all aviation meetings as is Mr. "Jerry" Shaw in these days. The Shell representatives are always well to the fore everywhere.

The aero-engine of to-day is a much more reliable apparatus than it was fifteen years ago, but the need for reliability is so great that no precaution tending to enhance it can safely be neglected. And it is not reasonable to expect any internal combustion engine to run reliably on unreliable fuel. And, briefly, that is why Shell spirit is to-day the most widely used aircraft fuel in the World.

Shell Aviation Spirit was not put on the market as such till 1913. But even in the earliest days of flying, Shell was regarded as being thoroughly reliable.

There is also another contributory reason in the vast Shell distributing organisation, and in the enterprise which the Shell firm will always display in seeing that adequate supplies of the right kind of spirit are available wherever and whenever they are needed.

Shell spirit was supplied for the first direct Trans-Atlantic flight, by the late Sir John Alcock, on the first flight from London to Cape Town, by Sir H. van Ryneveld, on the Marchese di Pinedo's flight (Rome—Australia—Japan—Rome), and on many similar flights of an epoch-making nature.

When it is remembered that in many cases the success of these flights have depended upon the possibility of picking up fuel supplies in the most desolate and deserted places on earth, it will be realised that a very great effort on the part of the Shell organisation has been an essential to the recent progress of Aviation.

TITANINE-EMAILLITE LTD.

Prior to the War aeroplanes were produced in very small quantities and the process of doping fabric was not a whole-time occupation for any person. When aeroplanes began to be built in quantities, and doping became a regular occupation, a number of cases of poisoning of a singularly unpleasant nature occurred amongst those regularly employed in doping sheds.

The cause of this trouble was traced to the inhalation by those so affected of the vapour of one of the solvents universally used at that time in dope, and in order to prevent this form of poisoning, elaborate regulations for the ventilation of doping shops were framed and enforced, at very considerable cost and inconvenience to all concerned.

Titanine, the first successful aeroplane dope in which the poisonous solvent was not employed, was introduced at a period when the dope-poisoning scare was at its height. It scored an immediate success, not only because of its non-poisonous qualities, but because of the extremely satisfactory results it gave as a dope pure and simple.

And the long list of successes gained by Titanine-doped aircraft proves it is also at least as good as the best poisonous dope and a good deal better than most.

TECALEMIT LTD.

Fifteen years ago lubrication in Aviation meant engine lubrication, and that alone. Certainly if a landing-wheel shrieked aloud in the process of taxying it might be removed and the hub filled with grease. And it is not inconceivable that oil-cans had been used at that time on stiff control bearings. But any sort of ordered scheme for the lubrication of undercarriages, controls and other vital organs of the aeroplane simply did not exist.

To-day the aeroplane, apart from its engine, has a complete lubricating system for these various organs, usually a system based on the high-pressure grease-gun developed comparatively recently for the lubrication of the chassis of motor-cars. And the grease-gun system most widely employed for this purpose is that known as Tecalemit.

Although Tecalemit was a name unknown fifteen years ago, the present use of Tecalemit greasing for aircraft owes a good deal to the fact that the British Managing Director of Tecalemit Ltd., Major R. A. Chalmers, late R.A.F., is one of the earliest pioneers of Aviation in Europe. He was in fact the Chalmers of Dutheil-Chalmers, famous in 1909 or so as makers of aero-engines.

The first monoplane to fly, the Santos-Dumont Demoiselle, was fitted with a Dutheil-Chalmers two-cylinder opposed engine of 25 h.p. This first flight was made in November, 1907, and very many successful flights were thereafter made with this type of machine and engine.

Engines of this breed, up to and including a six-cylinder 60 h.p. type, were made in the succeeding years, and were used not only in France but in a number of other countries—including England, Russia, and Roumania.

C. C. WAKEFIELD AND CO. LTD.

The aeroplane (not the journal) cannot fly unless the engine will run, and the engine cannot run unless it is lubricated. Oil is the only available lubricant, and not all oils will lubricate an aero-engine satisfactorily. Even the car engine is inclined to be fussy in its taste for oil—the aero-engine is very decidedly more so. And the firm which from the beginning of Aviation has taken special care to provide oil which will satisfactorily lubricate aero-engines can justly claim to have played a very large part in furthering the progress of flying.

Such a firm is C. C. Wakefield and Co. Ltd. In 1911 Wakefield's Castrol had already established its reputation as a lubricant for aero-engines. All the events at the Doncaster meeting in October, 1909, had been won on Castrol. M. Paulhan used it on his £10,000 London—Manchester flight. Most of the successful competitors at the Bournemouth and Blackpool meetings in 1910 used Castrol. It is not possible to record how many of the competitors in the 1911 Circuit of Britain—which occupied so much space in the earliest numbers of this paper—used Castrol, but certainly many did.

And since then Wakefield Castrol has continued to be the most widely used of aero-engine lubricants in this country. Practically all the British makers of aero-engines recommend one or another grade of this famous lubricant for use with their products. Practically every great British flight has been oiled by Wakefields.

Apart from this connection with Aviation, the direct personal interest of Sir Charles Cheers Wakefield, the Governing Director of the firm, has always been manifest. He has regularly entered machines in the race for the King's Cup, he has recently presented a Moth to the Lancashire Aero Club, and he is the founder of the two Wakefield Annual Scholarships to the R.A.F. Cadet College at Cranwell.

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